The Builder.

VOL. XXXI.—No. 1573.

*The Real, the Conventional, and the Ideal.**

IN the present state of the fine arts in this country, the most important,—or, at all events, the most self-supporting,—branch of design, is, probably, portraiture. In this pursuit, while family affection, social respect, historic pride, physiognomic study, concur in demanding the portrayal of individual likenesses, it is unfortunately too often the case that the mainspring of the call on the painter is personal vanity. Under this disastrous influence it is impossible that the noblest features of art should be developed. The vigorous grasp of physiognomical characteristics, good or bad, which is the chief merit of portraiture, is not cultivated by the painter whose main object is to please his sitter or his friends. Neither the dress nor the ordinary type of—at least the men—of our time and country is often picturesque. Thus the pursuit of portrait-painting for the sake of income tends to falsify or to conventionalise art, and to cramp, rather than to develop, the powers of the artist. Refuge is sought in the courtly blandishment of some fashionable painter against the unflattering testimony of the camera. Few things are more distasteful to a man of culture than to be expected to look through some richly-bound volume, full of the *cartes de visite* of the family and friends of the owner. The sacrifice of the most pictorial light, or of the most characteristic expression, in the least ordinary of the subjects; the intolerable self-satisfaction betrayed by others; the positive hideousness,—thanks to strong and ill-cast shadow,—of many, lead one to wish evil to Fox Talbot. But the walls of many of our exhibitions are crowded with productions which share the general want of interest of *cartes de visite* without claiming even their questionable virtue of a sort of grim fidelity.

At times, indeed, the painter will clothe his sitters with the mantle of his genius. He will see the *man*, and reproduce him on the canvas. Thus wrought Titian, Vandycke, Gainsborough. Or an artist may see his subject through the coloured light of his own pictorial imagination, and present it to the admiration of posterity aglow with that borrowed lustre. Thus did Sir Thomas Lawrence. An air of noble, if somewhat histrionic, dignity was communicated by his brush, while likeness was yet preserved. In comparing portraits of the same famous beauty by two such ornaments of their profession as Sir Joshua Reynolds and Gainsborough, no one could mistake who was the painter of either. The strong paternity of the painter's genius is as distinctly apparent as the material evidence of his art.

We are not without ample guidance for the formation of a pure taste in portraiture. All the elements of what may be called realistic, conventional, and idealistic treatment are illustrated by the relics of ancient art. As to painting, those only who have had the rare good fortune to witness the first unveiling of some long-buried Roman fresco at Pompeii can speak with full appreciation; but in sculpture we have instances of an excellence that is heroic. A few, very few, Greek gems and coins, a more numerous collection of portrait busts of imperial Rome, and a selection from the Papal medals, especially those about the date or ascribed to the hand of Cellini, carry portraiture to its *apogee*. As we look on them with wonder, no less than with admiration, we may reflect how the vehement pathognomical action of the human countenance among these impulsive races, and in a climate where the blood runs so hotly, ever present to the observation of the artist, instructed him in the subtle truths of physiognomy. Unchecked and violent play of feature, no less than of form, was constantly educating the ancient artist who looked at human beings as subjects for portrayal. With this constant exhibition of the clothing of sentiment and passion in expression was blended the influence of the traditions of art, the constant reference to those methods of delineating certain ideas, or certain characters, that had become conventional and determined.

The influence on Grecian art of special means of observing the play of human emotion may be detected, in its most delicate phase, in the difference that exists between the degree of individuality given by Greek artists to the representations of the two sexes. Certain ideal embodiments in the course of that progress of art of which the history fails us, had been arrived at by the period of highest excellence. Certain genii, or gods, or mythological personages, had assumed not only conventional attributes, but permanent conventional types. Jupiter, Hercules, Apollo, Mercury, Neptune, are to be recognised even in fragments. With the conventional idea strongly impressed on his mind, the artist constantly reverted to the formation of nature when he sought to reproduce the type. The Wearied Mercury, that masterpiece of Italo-Greek sculpture, was not an academic study from a model. It was not patched up, like the design of a Wedgwood vase, from a gallery of statues. It was not drawn by the artist from his own conventional erudition and anatomical knowledge.

It is impossible to study that all but breathing bronze without tracing the evidence of the different elements mastered by the sculptor in perfecting his marvellous creation. First is the tradition of art—the conventional idea of Mercury. No one would think the statue intended for that of a youthful Hercules, or of an Apollo, or of a Cupid. Then there is the inspiration of the pose,—the languid, momentary, voluptuous, repose;—the stereotyping, for all time, of an actual incident in the life of a real Grecian youth, that caught the sculptor's eye by hazard, and never faded from his memory. With this we have the fruit of patient, truthful study of the actual model; of the aid derived by the sculptor, in the embodiment of his well-pondered design, from the constant comparison of his work with the living form. In the absence of either of these elements of art, such a production as the Wearied Mercury would have been superhuman.

We may contrast such a work as this with the productions of Flaxman. In him we behold an artist of rare and delicate taste, formed on the purest models of the art of the past. He loved Greek art with a passionate love. He stored his memory and his sketch-book with its forms; he became almost as fully possessed with the conventional ideas of classic sculpture as Phidias himself. Nor was imagination wanting, nor labour. But occasion failed him. In the habitual life and movement of decorously-dressed English men and women, or in the commanded and artificial attitudes of models, classic art could find no food to digest. It became starved to death. One ramble, in a hot summer evening, on the wave-beaten shore of Sorrento would have given Flaxman that without which it was vain to seek to evoke the shade of Hector or of Helen. A glimpse at Southern life,—at the heroic,—the nude,—the natural,—and then a faithful study of the typical living model,—for even the proportions of the Northern races differ from those of their Southern cousins,—and Flaxman would have grasped that triumph which his taste, though not his method, deserved. But Flaxman's Italian sketches are not taken from life, but from sculpture. Thus, Italy failed to impart the true lesson to his mind.

While so distinct an individuality marks the heroic sculpture of the male sex, female forms, or rather female faces, are far less readily distinguishable. Flora, Juno, Hebe, Minerva, Diana, Venus,—who can tell which is represented in the absence of her attributes? It may be thought that the comparatively neglected state of female education in Greece may in great measure account for this want of ideal individuality. To some extent, this may be the case. But in an age which produced such women as Aspasia or Sappho, and in which freedom of female action was vindicated by such a tongue as that of Xantippe, there could have been no want of characteristic female portraits, had the artist been as free to observe the gentler, as the ruder, sex. And among the Roman portrait busts we find most marked instances of individuality. Sabina, and Plotina, and Cleopatra, have come down to us through the shadows of time with as distinct individual vitality as Tiberius or Scipio; or the immortal Caius Julius himself, whose long-throated effigy is such a glory to the British Museum.

In depicting goddesses and heroines convention was at a loss; for so was observation. With queens, and empresses, and famous beauties, the sculptor was as much at home as with their lords. But the most graceful inhabitants of Olympus never came altogether out of the golden haze with which the Southern sense of decorum thinks it needful to veil female chastity. And when at last a long-lost art dared to present,—in spite of some lingering sense of impiety,—the female form entirely unveiled, neither physiognomical nor pathognomical knowledge of the sex was on a level with the anatomical excellence which even in the work of Praxiteles tells more of the labour of the modeller than of the inspiration of the poet.

There can be little doubt that the conventional element of Greek art was an inheritance from Egypt. In Egyptian sculpture conventionalism may be said to have attained its highest power. Certain features, such as the eye, are represented, during certain periods of Egyptian art, absolutely out of drawing. Other details, whether accurate in their resemblance to nature or symbolical (suc., for instance, as the short, square beard), can only be regarded as conventional indications of actual forms, whether the artifice were that of the sculptor or of the subject. The attitudes are stiff; the proportions, at times, preposterous. The constant repetition of reciprocally-indistinguishable forms, of Colossus or of Sphinx, however it may have excited the sense of sublimity, is hardly fitted to awaken that of beauty. But amid all that is so foreign to a taste which has been formed on Greek models, the sense of power, of repose, and of serenity that broods over the mighty images of the buried Pharaohs denotes a very lofty phase of art. The sculptor in the time of the eighteenth Egyptian dynasty may be said, like the ancient monarch himself, to have sought to see the gods. In the age of Pericles, the artist regarded human passion and human beauty. Under the fierce blows of Michelangelo, marble seemed to become plastic, and the observer gazes with wonder, not unmingled with awe, at the mastery evinced by the artist alike over his material and

* See *ante*, p. 177.

over his subject. In the works of Roubiliac marble is made to counterfeit a textile structure, in the drapery, and life—or death—in the figures themselves. In many of the works of Bacon we see an elegance equal to that of the Gascon sculptor, shorn of his audacious boldness; and we trace a graceful mannerism as characteristic as that of Lawrence himself. And so we descend to the street sculpture of the day,—to the Wellington on the Marble arch,—or to the Peel, which, in Palace Yard, proved intolerable even to London.

Regarded in another light, we may say that sculpture, in the time of the kings of the name of Thothmes and of Amenophis, had not yet fully separated itself from architecture. In the Greek period it had passed into its own special phase of epic art,—of poetry in marble. Imperial sculpture waited upon empire, and sank into portraiture. With the Italian artists, sculpture became the handmaid of religion, of superstition, and, finally, of ostentation. And so went on the decadence, till the sculptor sank into the companion of the sexton, or, still more lamentable, into the designer of lampstands, and the decorator of the *salon*. The terrors of death itself would be augmented, to a man of refined taste, if he thought his memory destined to be associated with the oppressive ugliness of such a stable-door as now disfigures the aisle of St. Paul's, under the name of a monument to Lord Palmerston and his brother,—a ponderous, gloomy, unmeaning gateway, flanked by two very questionable angels, trampling on their own wings, like a couple of demonstrative barn-door chanticleers.

Unquestionably the most perfect and harmonious combination of the ideal, the conventional, and the realistic is to be found in the architecture of Greece. The noble proportions of those Classic forms, which, after a lapse of more than 2,000 years, still challenge any attempt at rivalship, are derived from the very simplest origin. A row of posts,—rough, unsquared trunks of trees,—with a block or slab placed underneath (as we guard our mining framework of to-day), to give a broader basis for the upright; horizontal beams, laid from post to post, and others laid at right angles athwart; a pointed lean-to roof; these are the rude expedients, common to almost every human race, that have grown into the lofty columns, the graceful bases and capitals, the entablature, the triglyph, and the pediment. Realistic, in the humblest sense, in their origin, the various architectural elements bear the impress of a conventional mode of treatment that has maintained the general form of wooden structure when the material was entirely changed. The most brilliant and costly marbles of Attica were not employed in structures of an essentially masonic character. The very term of trabeate architecture tells of wood, and of wood alone. A true masonic style may be said to have originated in Italy, especially in those districts where, as on the Adriatic coast, a fine soft stone, that hardens on exposure to the air, tempts the sculptor to lavish his work. We there find in the windows, the door-posts, and the masks, gurgoyles, consoles, and other unnamed ornaments that luxuriate over the costly palaces, a richness that so far overpowers the original idea of Classic outline and regularity as to form almost an independent style. But as in Egypt and India we find either the earth mound or the cave to be the original type followed by the architect, so do we trace the impulse of a wood-building people even in the noblest triumphs of Greek architecture. Yet where does the ideal soar to such a pitch? Whence was learned the numeric harmony that defines every proportion? What grasp of optical law was possessed by the mind that substituted the delicate curve of the outline of the column for the rigidity of an undeviating straight line? How has the humble,—we may almost say the ignoble,—element of the pitched roof (the expedient of countries where snow has to be provided against) become the very Olympus of sculpture, in the glorious Athenian temples; and thus come to be considered as such a necessity in buildings of a certain costliness as to have descended to us in the porticoes of the British Museum and the Royal Exchange? So perfect became the workmanship, that the designer's art paused, and finally resigned itself to the mere effort of reproduction, with no variations but that of scale. In the capitals was provided, even by the severest law, an outlet for individual fancy,—a space for an extempore utterance in the liturgy of art. But even of that it is comparatively seldom that the architect has availed himself. The symbol of the Deity to whom a temple was dedicated is to be sought in the capitals of the columns. It is mostly confined to an insignificant boss. In the costly pillars which have been crowded by the great Saracenic builders into the Dome that protects the sacred Altar Rock at Jerusalem, at least a dozen different forms of capital may be distinguished. The most exquisite play of fancy (when we once depart from the pure Corinthian type), with which we are acquainted, to be found in this department of architectural design, occurs in the case of Pompey's Pillar at Brindisi, where the heads of sea-gods are entwined by the foliations of the capital.

We are not among those who hold that the delicate harmonies of structural proportion have been exhausted, and that, with the close of the Classic period, architecture uttered her last noble message. More than three centuries of Gothic art protest against such an idea—of art that was indigenous to non-Latin soil, and that sprang up with a vigour, and flourished into an exquisite beauty; that was fed by Teutonic fancy, Teutonic earnestness, and Teutonic faith. We will not now linger to trace the outcome of the three elements of which we are speaking, either in the severe and noble forms of Early English work, or in the burst of luxuriant beauty in which the art expired. But let any architect attempt to do what is thought desirable by some modern painters. Let him dissolve the harmony of his art. Let him be real, with the sordid realism which was encouraged by the window-tax; with the realism of that pigstye style of architecture which produced the hideous forms of the old Dissenting chapels, now generally swept away. Let him argue for the beauty of the conventional forms of street architecture, of suburban lath and plaster,—for the ideality of an elevation of his own, unlike any for which a precedent can be found elsewhere. We know to our cost what is the result of attempts such as these. We set them down, not only to bad taste, but to positive professional ignorance. From this judgment there is no appeal. And it is only because the painter addresses a more limited and a more timid public; because, little as he may know of the great and enduring laws of his art, ninety-nine out of a hundred of his spectators know less; that the imposition of assuming to found a new school on neglect of main principles of art can for an hour escape detection. Architecture may supply more ready illustration of this important truth than can either sculpture or painting; but the law in the three sister arts is the same.

The expression, then, of a realistic, an idealistic, or a conventional school is tantamount to the phrase of confessedly imperfect art. In any truly pictorial or sculptural design the three ideas must be combined. To attach undue importance to either is to ignore the proper influence of the others. Nor is this all. Not only is a devotion to, for example, what may be called a realistic treatment, accompanied with a blindness to some of the noblest qualities which the artist ought to cultivate with the utmost care, but it defeats its own limited object. An attempt to reflect in an imperfect mirror,—to copy, not to reproduce,—will, after all, have as little actual reality as Chinese perspective.

It is not the case that an appreciation of the true elements of excellence in art (such as leads the critic to describe the artist who seeks for fame by a pursuit of only one of the many studies necessary to complete mastery of design, as being only imperfectly educated) would tend to the production of sameness or unpicturesque uniformity. In the absence of original genius, high art cannot exist; and such genius will always speak in its own native, unmistakable accents. Let us press into the service of art the resources of chemistry and of mechanics. Let us chasten the imagination by accurate anatomical knowledge, fire it by the contemplation of all that is most beautiful in nature, and guide its wing by the study of all that is most excellent in ancient art. The result will be like that of giving tools to a workman or forces to a general. The true artist will create, under such a training, productions to which he could never have attained by uncultured effort; but he will no more lose his individuality or simulate the work of a brother artist than Wellington can be confounded with Hannibal.

It is therefore every way to be desired that writers and thinkers on art should cease to speak of the real, the natural, the ideal, the conventional, or the like, as distinct and competitive principles, pursued by schools of rival excellence. The true artist must grasp the whole. He must be natural,—for he must see nature as she is, not in her outer clothing alone, but as the teacher, the mistress, and the friend; and he must bear her message to the world. He must be real,—for such a message is truth. He must be conventional,—for he must know the result of the study, and the insight, and the practice, of those who have gone before him in his path. He must reap the fruit of their labours, and profit by their errors. He must learn to speak in a language that is understood by mankind, and to appeal to a sentiment prepared to respond to his utterance. He must be ideal,—for if he unite all the former excellences, and yet look only on the lowest, the meanest, the most paltry aspects of life, he will be but a hewer of wood and drawer of water for the temple of art. He must learn to seize the noblest motives, to portray the most beautiful forms, to clothe his work with the most elevated associations. Thus only can he hope, in his life or in his works, to attain to the fellowship of the immortals.

COLOURED DECORATION.

ON this subject Mr. G. Aitchison read the following paper at the last meeting of the Architectural Association:—

From very early periods it is probable that something was used for the express purpose of decorating the abode of man. The skins and leaves earliest used to exclude wind and rain, or to insure privacy, must have suggested ornament when their place was usurped by woven stuffs; and in fact the greater part of all the patterns used for modern decoration point to their woven origin. To those who dwelt in caves, in holes, or subsequently in mud or mud-lined huts, sculpture most naturally suggested itself, and doubtless some rude kind of painting was almost coeval with it. As wealth and civilisation increased, the various substances that are useful, pleasant, or ornamental were added to increase the splendour and comfort of man's abode. The perfection to which decoration arrived at many epochs in the world's history we probably owe to religious enthusiasm. Man when confined to purely selfish objects is but a poor creature, and it is only when generations of men are fired with patriotic, religious, or benevolent enthusiasm that individual man exhibits the highest capacities of his nature. We shall find the most perfect specimens of decoration in the church, the temple, or the mosque, rather than in the house, the palace, or the council chamber.

The arrangement of decoration in one way is simple, as in the bulk of cases it is internal, and can but be applied to the floor, to the walls, and to the ceiling. The floor has to be walked on, and the lower part of the wall to be protected from injury, dirt, and stains, and, if possible, made agreeable to the touch. Therefore, properly speaking, the upper part of the walls and the ceiling are the only parts in which the decoration is purely for instruction and delight. And as "the proper study of mankind is man," you will find that the main body of the decoration in every palace, church, or temple is the depiction of man, except in the case of those religions where the portraiture of the human form is forbidden. But this is the art of the sculptor or the painter, and with neither of these do I wish to interfere, confining myself to the humbler part that falls to our lot. Let me say that no one should attempt decoration in whom loveliness of colour is not an enrapturing delight; for such a one, if he once departs from monochrome, will be a curse. If his greatest pleasure is not to bathe in the liquid-coloured light of fine stained glass,—to watch the colours fade out as the sun goes down, imperceptibly fading into greys and greens,—to be entranced with the deep azure blue of the mountain gentian,—never to forget the flaming star that the sun makes of the first autumn leaf, in the deep gloom of the woods;—if he has not been thrilled with the harmony of some bit of chequered light falling on a mountain stream from between trees,—or with the mysterious colours of a distant wood or mountain,—even if he does not dream of the beautiful colouring of some Oriental dish, dress, or carpet,—let him avoid coloured decoration. Always remember that you are Englishmen living in the nineteenth century, and in all probability doing work for Englishmen of the nineteenth century, and that you owe to yourself, to them, and to your country that you give something beautiful and new. Do not be a copyist, a reproducer, a paraphraser, or imitator, but do what is lovely to

you, and make those you do it for love it. You are an artist, an inventor, a maker, a poet if you will, and you are to impress your own creations on your own age. If you have no new ideas, no inspiration, nothing that you think lovely and want to do,—leave decoration and do something else. Decoration is an art, and therefore little can be written or said about it,—it is not a science for which rules can be given. At the most you can only give recipes, and those are not of much value. Colour is the main thing to study, and it is not the Greek or any other example that should be studied by day and by night,—but the book of nature. You have the sky and the clouds, sunset and sunrise, the pond, the lake, the river, the sea, and the ocean, the woods and fields, the rocks and mountains, the colours of birds and flowers, of butterflies and beetles, of beasts and fishes, and from these you cannot but learn. And you will learn much more even than form and colour,—you will learn what may be called the inexhaustible patience by which effects are obtained. You will generally on close examination find that in a brilliant flower the brilliance is partly obtained by the various gradations of tint and tone, and partly by its having some small spot, speck, or dot of complementary colour placed where it gives the greatest effect. The light is concentrated on one particular spot by its sculptured form. You will find that the surface is ribbed or embossed,—the texture is dull like silk, or shiny like satin, or piled like velvet, or shaggy like plush,—and that its general effect of colour is set off by the tertiaries of its leaves and stalks. After successive and unavailing attempts you may throw down your brush in despair on finding that your sketch has just missed the grace of the flower, and the peculiar loveliness of the colour. In such work, however, you will, if you persevere, learn much. You will improve your taste, and your admiration will be raised for the inexhaustible fertility of invention, and the exquisite subtlety of the methods that nature employs to bring to perfection one little perishing flower. You will also learn the relative value of form and colour. Throughout nature you will find that some things are to our eyes only barely agreeable; others are ugly; while some are of an exquisiteness of form or of colour that you could never have appreciated without diligent study. These are what the French call *distingué*. As an instance, the beauty of the flower of the pumpkin may be noted,—not rich in full colour, but perfect in form. The leaves of the lemon have charmed many a painter by their peculiar gracefulness, his trained eye discerning in these varied forms of delicate loveliness a rare quality, not revealed except to the initiated. Natural objects are by no means equal in beauty. It is as ridiculous to suppose that all things are equally beautiful as to contend that the croak of the crow or the scream of the peacock is as musical as the song of the nightingale. The union of perfect form with perfect colour is all too rare in the work of man. Remember always, that though we are now supposing colour to be the only matter requiring to be studied, when you can apply it to and among pure and finished forms its own value will be enhanced. Beauty of colour may do much to correct or to cloak imperfect architecture; but the finest work of man is the wedding of wealth of colour to what is in itself noble, graceful, or otherwise excellent,—as music to immortal verse.

In designing the decoration of a house, you have to consider the various uses for which the parts of the house are intended, and this must necessarily govern your style of decoration. Let us say, your house consists of a hall, staircase, library, dining-room, drawing-room, boudoir, and bedrooms.

The hall is a passage only for the inmates and their visitors, and a waiting-room for servants and messengers. It should convey, to a certain extent, a notion of comfort and of the quality of the house. It must not be too dark, or else it makes the reading of addresses, &c., too difficult; and as it is generally a receptacle for hats, coats, rugs, sticks, and umbrellas, it will require a plainer and broader treatment than other parts. As visitors cannot conveniently linger there, no very elaborate decoration is required. Such decoration might also spoil the effect of any more elaborate adornment of the staircase or the rooms, by raising the expectation too high, or it may give a smack of ostentation to the house. This applies, of course, only to the halls of ordinary town and suburban houses. A fuller and richer treatment of very special kind may be used in halls of large monumental country houses or town palaces. The hall of the Roman house in which the patron received his clients required, so to speak, much decoration, as something of a compliment to those who visited it; and a parallel demand for stateliness or appropriate elegance is made for a hall used often for receptions of any kind.

The staircase must be light; or, if the lighting is insufficient, the tone must be light, so as not to increase this insufficiency. A staircase may be treated in almost any way, either simply or elaborately; but, of course, this must greatly depend on its architectural character and on the decoration of the rooms. If the staircase is very small or narrow, elaborate decoration is thrown away. If the rooms are brilliantly and gorgeously decorated, the staircase must be simple, or you injure their effect. If the rooms are treated with severe simplicity, you may concentrate the splendour of your decoration on the staircase, unless it is to be the field for exhibiting sculpture or painting. In this case the pictures must be your first consideration,—the grounds for them kept quiet, and gold and silver used sparely if at all,—or the high lights will be destroyed by the brilliancy of the reflections from the metals.

For the dining-room, you want to convey the idea of warmth and comfort; and as it is frequently the picture-gallery of the house, it must be treated in entire subserviency to the pictures,—as a setting for the gems.

The library is for study, and its decoration must also be broad; not so light as to fatigue the eye, nor so dark as to render reading difficult. There must be nothing in its decoration to distract or even greatly to attract the eye.

The drawing-room is, perhaps, the most difficult room to treat, for it has to fulfil so many different and even opposite requirements. It must be light and cheerful by day, as well as brilliant at night. It must be suitable to the complexion and dresses of ladies, and this while its walls have to serve as background for pictures, china, and objects of *virtu*. Satin damask supplies much good decorative material for drawing-rooms. A room that is to be used largely for music has other difficulties as well. Here no stuffs may be used in hangings in any quantity: even flock paper is considered objectionable by musicians and musical critics. Wood, too, will be preferred to plaster. At all hazards and at the cost of any amount of difficulty let each room be first of all thoroughly suited for its special purpose.

The boudoir is easier. It is the temple of the lady of the house, and must be treated the way most advantageous to her complexion. An air of luxurious repose must also be given, with some tinge of its fitness for her especial pursuit, be that art, music, or literature.

The bedrooms should be light rather than dark, and may be either plain and simple, or gorgeous and elaborate, but to my thinking there should be nothing in their decoration which would suggest difficulty in the frequent use of the mop, duster, and scrubbing-brush. Frequently a large bedroom is used also as a private sitting or reading room. Hard painted walls, ceilings painted or whitened, give the agreeable impression that results from the suggestion of perfect neatness and cleanliness. Decorative papered ceilings are inferior in this view to washable surfaces.

Let common sense guide you in your main arrangements, art and skill in the disposition, and genius, or at least study, in your inspiration of colour. Carry, too, into each detail of each room the sense of special fitness to that part, also the appearance of adaptation to all the circumstances, which is never without a charm for the intellect. Floors should be rather dark than light; the lines, spots, or patterns not too trenchant. Though you do see carpets of living flowers walked over by processions in Italy, I think unshaded patterns are the best for floors, pavements, and carpets.

In ordinary houses and in most rooms the height of the dado is fixed by the height of the chairs, unless perhaps in a dining-room with very large pictures or tapestry. Then the dado may reach on occasion as high as the head, and perhaps have brackets or a shelf for china. Dados may be wood, either of the natural colour or coloured, stained, or painted and varnished, with but very slight polish. I think if the carpet or floor is not the lowest-toned portion of the whole decoration, the bottom of the wall or the dado should always be darker than the upper part. Force may, however, be given to a dado by architectural form,—by vigorous mouldings, for instance, — sufficient on occasion to give it emphasis enough to take proper place in relation to darker colours over. The upper part of the background proper may be of velvet, of dull stuff, of flock, distemper, or even flatting. If not for pictures, it may be hung with tapestry or figured paper, or it may be painted in a pattern sufficiently interesting to engage the eye and attention, but not too obtrusive. Good low-toned tapestry is always agreeable in a dining-room, if pictures are not to be hung on it; but you cannot put one picture over another. Bad pictures are as inadmissible as bad wine, being costly luxuries. Everything must be subordinated to good pictures. Warm neutral greys, greens, or dull reds are most serviceable as backgrounds, for reasons apparent to all who know Chevreuil's law of complementary contrasts. The main body of the ceiling should be white, or but slightly toned,—even a gold ground is rather heavy. Deep coffers and much gold give an effect of weight too heavy to be carried. Much gold has also a reddish, unpleasant heat, that should be carefully avoided or dealt with specially. In the background of Byzantine decoration the heat of the gold grounds is partly neutralised by the greenish tinge which intervenes between the picture and the ground. The Chamber of Commerce at Perugia has the main body of the ceiling black, an arrangement of colour only tolerable in a tall room, and then of very doubtful expediency.

The arranging reds and blues so as to harmonise seems to have been specially sought after by the Old Masters. This is attempted frequently by Titian with much success,—with reds and blues inclining towards purple. In the inferior Masters, the juxtaposition sets the teeth on edge. In the macaw and other gorgeously-coloured birds, Nature brings about this harmony. Here, in one of the most difficult problems in your decoration, you will find light and leading at once form critical observation of the ranks of the great ancient and modern colourists, and of nature. And this instance is but one among many. At the Zoological Gardens, or British Museum, you will often find the simplest and most perfect solution of a colour problem inviting a difficult harmony,—some spots or streaks interspersed of white or some intermediate colour, or a gradual bringing together of tints themselves. In precious stones, the absence of determinate colour has for many a great attraction. The turquoise most prized by jewellers is the deep blue; colour critics prefer the stones bordering on green. Much of the vulgarity of British dyed stuffs came from the raw unmixed colours used in them. This is happily much corrected, and the teaching from Oriental stuffs, that seem always pleasing, is bearing fruit. Hued surfaces are taking the place of the pure old colours. No doubt much of this preference rests on the delight of the human eye in variety.

In each room seek for some principal object as the key, and work up and down to that. If some prominent piece of furniture, as a splendid cabinet, is in a room, you must work your general decoration to be in harmony with it. If you want a room to be a success, you must choose carpet, curtains, and furniture: one blot of inharmonious colour may spoil all.

Every colour may be made to harmonise with every other, but only by varying its tint and tone. In nature there is no flat or uniform colour anywhere,—not in the gradual melting of a blue sky, nor in the smallest leaf or speck of dust. Large, flat, uniform tints are always unpleasant, and are only to be allowed where the surface is broken up by many objects. Those single colours please us most that approach other colours, or waver, as it were, between two. Emulate, if you will, the gorgeous colouring of India, the brilliant colouring of China, or the soft harmonies of Japan, but do not copy slavishly the works in which you find them.

Mr. Elim H. D'Avigdor, C.E.—As to providing improved dwelling-houses in Vienna and the vicinity, which has engaged popular attention for some time past, several pamphlets have been published, and of these productions, says the *Jewish World*, the German press is unanimous in commending one in particular, which is from the pen of an English gentleman, Mr. Elim H. D'Avigdor, C.E., a scion of the Goldsmid family. The pamphlet also contains designs for remedying the nauseous odour arising from the overflowing of the river Danube.

THE CITY CHARITIES AND DWELLINGS FOR THE POOR.

ON Wednesday last, the special committee of the Charity Organisation Society, at their meeting in the Offices in Buckingham-street, in the Strand, were engaged in a discussion extending over nearly three hours, on the "Bearing of City and other Charities on Metropolitan Dwellings for the Poorer Classes." Amongst the members of the committee present, were,—Lord Napier and Ettrick, the Earl of Aberdeen, the Hon. T. Pelham, Mr. Andrew Johnston, M.P., Sir Charles Trevelyan, Mr. W. Gilbert, Mr. J. Liddle, Capt. Gardner, R.N., General Cavannah, Mr. J. S. Storr, Mr. W. H. Hall, Mr. J. R. Rolland, the Rev. R. J. Simpson, Miss Octavia Hill, &c.

Mr. Gilbert, after endeavouring at considerable length to show that the various charities in the City had at their disposal sufficient funds to erect dwellings for the poor within the City and Metropolitan area, moved a resolution to the effect, "That a deputation from this committee wait upon the Corporation of the City of London, the Ecclesiastical Commissioners, and the Metropolitan Board of Works, to submit to them the justice of letting, on moderate terms, portions of land for building dwellings for the working classes, so as to allow them to profit in this way by the valuable endowments and charities originally intended for their benefit."

The motion gave rise to a lengthened discussion, in the course of which objection was taken to the latter part of the resolution, on the ground that eleemosynary aid to the poor was no part of the business of the committee, the improved dwellings for the poor being what they were alone appointed to consider.

In the course of the discussion, Dr. Ross proposed the following rider to the resolution:—"And that this committee is of opinion that the charities possessed by the companies, vestries, and other public bodies in the metropolis, in all cases where the original trusts cannot be carried out in their original intent, might be appropriated to facilitating the erection of dwellings for the industrial classes upon terms that would not permit such buildings to be regarded as charitable institutions."

After some further discussion, both the resolution and the rider were withdrawn, it being understood that Dr. Ross would bring forward the latter at a future meeting of the committee; and after some remarks from Mr. Andrew Johnston, M.P., Sir Charles Trevelyan, and others, in the course of which the maladministration of the several City charities was freely canvassed, the following resolutions, propcsed by Lord Napier and Ettrick, and seconded by General Cavannah, were adopted:—"That the sub-committee be requested to consider and report upon to the committee the amount and position of house property held in trust by the City and other authorities, or any public bodies connected with the metropolis, which may be made available for the improved habitations of the labouring classes of the metropolis;" and "That the sub-committee be requested to report upon the above, or to report upon the best means of carrying out the above resolutions."

In the absence of the chairman of the committee, the meeting was presided over by the Rev. R. J. Simpson, rector of St. Clement Danes.

INDIAN ARCHITECTURE.

ON Friday evening, the 21st inst., Captain Lyon lectured at the Royal Institution, Albemarle-street, on the "Temples and Idols of India." Mr. Spottiswoode took the chair, and there was a large attendance.

In the course of his remarks, Captain Lyon said that India possessed 140 millions of inhabitants, and about her temples and idols very little was known, the information on such point being very scanty. It had been computed that there were 300 million deities worshipped in India; they were treated in every respect like human beings. The temples were very celebrated, and were embellished with some of the most wonderful carving in granite that anywhere could be found. At Madura, the Rome of the Hindus, there was to be seen a beautiful mundapum, which cost one million sterling, carved out of granite, the galleries of which were formed of carved pillars, each pillar being a solid block of granite 15 ft. high. This exquisite piece of workmanship was represented with marvellous delicacy of outline, conveying a very clear idea of the immense time, patience, and skilled labour that must have been bestowed on its erection. There was also to be seen, too, at Madura, the golden lotus tank which the Brahmins assert was fed by the waters of the Ganges, passing 1,000 miles under the sea for that purpose; the tank was one of the most celebrated throughout India. In continuing the journey south, we come to Streevelliputtur, and there behold the great Juggernaut car, the finest to be seen in the south. It was constructed out of several smaller ones, and carved out of the finest ebony. The yearly peregrination it undergoes is well known, and the sight, once seen, never to be forgotten, beggared all description when it made its journey. Further south there was a little bijou, which, being hidden behind a rock, was lost to sight to nine out of every ten travellers; but it was well worth a visit, and some agreed that it was the finest in the whole of India. Its elaborate carving was truly marvellous. According to the account by a Brahmin high priest, it was excavated and carved in the short space of twelve hours by a son who had become indignant at the slow progress of the temple which his father was erecting on the other side of the rock. Ramisseram was known as the most sacred temple of India; some persons assert even more so than Benares. Concerning its sanctity, a poem had been written called the Ramayana, which filled an enormous volume. Connected with this temple are marvellous corridors, 4,000 ft. in length.

Turning northwards, and following the coast, we come across Avadea Covill, which, though one of the smallest, is one of the most wonderfully carved temples in India, its chief peculiarity being that the stone forming the pillars was so hard that no chisel could be found to cut it in these degenerate days. Passing on to Tanjore, with its magnificent tower 300 ft. high, there was here to be seen the celebrated bull of Shiva, weighing eighty tons, dating from the eleventh century. The temple at Tanjore, though a very sacred one, and justly renowned for its beauty, was literally deserted.

Still further north, and close to Madras, there was Mahavellipore, or, as it was commonly called, the Seven Pagodas. Nothing excited so much astonishment as this place, and it was doubtful whether the world could produce anything more remarkable than the monoliths here to be found. The more we examine them, and indeed the whole place, the greater was our astonishment, while at the same time we were lost in conjecture as to the motive or purpose for which such an amount of labour and time had been spent in forming these marvellous structures; for no record existed as to when or by whom they were executed. Not one among the many works here begun had been finished, and all seemed to have been undertaken by some enthusiastic rajah, or by people under some strong religious impulse, and all stopped simultaneously either by the rajah's death, or some other catastrophe; and no one could really form any conception as to the elaborate carving here displayed.

Illustrations from photographs were exhibited by means of the magic lantern.

FEMALE SCHOOL OF ART.

WEDNESDAY last was a proud day for Miss Louisa Gann and the Committee of the Female School of Art. The theatre of the University of London was crowded with students and their friends; the mistress stood first on the list of premiums offered by the Committee of Council on Education to the head masters and mistresses of these institutions; the prizes to be distributed were numerous and well deserved; and their Royal Highnesses the Prince and Princess of Wales were on the platform,—the latter to hand these prizes to the pleased recipients, and the Prince to speak to them afterwards with that geniality and heartiness which distinguish all he does. Prebendary Thorold read the report, which gave cheering evidence of the progress of the school. Professor Donaldson, who has long worked for the school, read the names for presentation to the Princess, ending with the heroines of the day, Miss Alice Blanche Ellis, Miss Julia Pocock, Miss Emily Selous (now Mrs. Fennessy), and Miss Emily Austin.

The Rev. Sir Emilius Bayley, one of the trustees, in a very felicitous speech, referred to the great assistance to the school which had been afforded by the Royal Family, and conveyed the thanks of the meeting to the Prince and Princess.

His Royal Highness said it had given them great pleasure to be there, and he cordially congratulated the young ladies who were before and around him upon their recent achievements, and hoped and believed there were evidences that whatever profession or position in life they might hereafter be called upon to fill, they would continue to be an honour to themselves and to the school to which they now belonged. It was equally his duty to tender his acknowledgments to the president of the school for the great interest he had always taken in its welfare, and also to Miss Gann and her efficient staff of teachers for their past zeal and efforts, some of the fruits of which they had had an opportunity of seeing that day.

Sir John Lubbock, Mr. Francis Bennoch, Mr. Butterworth, Mr. William Smith, and others who have worked in aid of the school, were present.

SOME FINE FURNITURE.

WE have examined with great interest and pleasure some remarkable pieces of artistic furniture which have been prepared for the International Exhibition at Vienna, by Messrs. Jackson & Graham. They show in so good a light what can be done in this direction in England that our readers will not complain if we describe them somewhat fully.

The first we come upon is an *ebony cabinet*, 6 ft. 6 in. long and 9 ft. 6 in. in height, in the Italian style, inlaid with ivory, and enriched with lapis lazuli and jasper. The cabinet is in two divisions, each in three compartments, the lower division being enclosed with three panelled doors, richly inlaid with ivory, and the frieze supported by fluted pilasters with very finely carved capitals, the plinth and frieze being also panelled and inlaid. The upper division is also enclosed by three doors, the centre door having plate-glass, for the purpose of showing objects of art and *virtu*, the doors on each side having panels of ebony, inlaid with ivory, of rich arabesque design, fluted columns inlaid with ivory, and richly-carved capitals, to support the frieze and cornice of the upper division, and in the centre of the pediment are the armorial bearings and monogram of the fortunate owner of this beautiful work of art (the Earl of Bective). All the inlaid ornament is engraved in the most perfect manner, and the beauty of the design (by Mr. Lormier) has been heightened by the art of the engraver. We have no hesitation in calling the cabinet work perfection.

Near this is a small cabinet, also in the Italian style, in which various woods (the choicest specimens of their respective kinds) are used, including amboyna, box, thuya, purple, satin, palm, ebony, and ivory; and the way in which these have been introduced, and their colours and figures placed in harmonious contrast, has been most carefully and successfully studied, so as to produce a charming effect of colour. The lower part of the cabinet is open; the plinth, panelled back, and supports all finely inlaid with the various woods mentioned, in elaborate designs of great beauty; the upper part is inclosed by doors, and the frieze and cornice supported by fluted and inlaid pilasters; the panels of the doors are ornamented with most delicate and exquisite arabesque designs, inlaid in ivory and various fine woods; the whole being engraved with the greatest care in the highest style. This cabinet is the property of Mr. H. A. Brassey, M.P., who kindly permits it to be sent to the Exhibition. Like the last, it was designed by Mr. Lormier, and the dimensions are 3 ft. 6 in. long, and 6 ft. 2 in. high.

In *a large cabinet*, of architectural design, by Mr. Owen Jones, a novel and very beautiful effect is produced, without the aid of carving or engraving, by the ornamentation of the pilasters, columns, panels, and friezes with inlaid ornament of various woods. This cabinet, which has been made for Mr. Alfred Morrison, is 7 ft. wide and 8 ft. high, and is in two stages. The lower portion consists of a centre panel, 2 ft. 6 in. square, with two side panels, 1 ft. wide by 2 ft. 6 in. high, separated by pilasters, 6 in. wide. The whole of the panels and pilasters are elaborately inlaid with holly, grey wood, orange wood, and purple wood, on an ebony ground. Below the panels is a moulded base and skirting; above runs an inlaid frieze and cornice, the different members being in different-coloured woods. The upper stage of the cabinet is equally in three divisions, the centre division being glazed in front of the pilasters. Separating the divisions are detached columns, carrying a frieze and dentilled cornice. The cornice is arched over the centre division, and encloses an elaborately-inlaid spandrel.

The general character of the composition may be called Italian; but in the ornamentation an attempt has been made to combine the purity of Greek forms with Italian playfulness, and with a tinge of Orientalism in the colouring of the several portions. As a piece of cabinet work, it is perfect. There are thousands of small pieces of wood here combined with an accuracy truly marvellous. The inlaying of the columns has been a *vrai tour de force*.

There are three other cabinets designed by Mr. Prignot, two of them being of ebony, inlaid with ivory and box-wood in very elegant designs, and one with various woods, the chief being olive wood, and the inlaid designs in the Greek style, the different colours of the woods being harmoniously introduced. A large *sideboard* and a suite of *chamber furniture* also deserve notice, but we have said enough to show the remarkable character of the works prepared by Messrs. Jackson & Graham.

CONCRETE HOUSES IN GERMANY.

DR. RIESE lately delivered a lecture before the Berlin Polytechnical Society, on the use of concrete, for the walls of houses. The concrete used by him consists of one part of best Portland cement and nine parts of coal ashes, scoria, sharp sand, gravel, brick-dust, or similar cheap materials. In the autumn of 1871 the lecturer built the first house of this kind at Friedricksberg, near Berlin. It is 40 ft. high. The front walls are, for cellar and ground-floor, 12 in. thick; first and second floors, 9 in. The supporting cross wall is 12 in. and the partition-walls are 6 in. in thickness. The building has shown itself sufficiently strong, notwithstanding the comparative thinness of the walls. In the middle of October of the same year the foundation for another house was dug, into which the lecturer moved within ten weeks from its commencement. It did not show the least trace of damp. The durability of the material and of the buildings has been indubitably proved by these experiments; and in consequence of these favourable results, twenty-eight cottages of concrete, mostly intended for clerks and working men, were erected at the end of the summer of last year. Most of them are inhabited already; the rest will be ready by April. In the twelve cottages last erected, the timber-work has been dispensed with, and concrete arching has been resorted to.

AN ORDER OF MERIT.

AT the last General Meeting of the Corporation of the Literary Fund, the president, Earl Stanhope, in the course of his address, referred to the recent debate in the House of Lords touching the wearing of foreign decorations by Englishmen. We were told on that occasion, said Lord Stanhope, that these orders were to be lightly regarded, and that, as Metternich said, it was a distinction to have no orders at all. And by whom? By Earl Granville,—a Knight of the Garter. Was it for that noble earl to tell other gentlemen that orders were insignificant, and that it was better to be without them? It would be as becoming for one of our merchant princes —a Rothschild or a Baring—to tell people that money was of no account. It was not for a statesman whose services had won for him the highest order in this country to blame those who had attained eminence in arts, science, or literature for being desirous of an honourable decoration. He (Earl Stanhope) thought that if the ambition of the blue or red ribbon was allowable or praiseworthy in statesmen, military men, or naval officers, it was not in any degree to be condemned in the artist, the man of science or of letters; and the very firmness with which they ought to resist foreign decorations being worn by Englishmen supplied a new and powerful motive for desiring that an order of merit should be instituted at home. If he met with sufficient approbation and encouragement he should be greatly inclined to move in the House of Lords an address to the Crown, praying that her Majesty would take the question of the creation of some such order of merit into her consideration. He thought such a motion would not be resisted, and that her Majesty and her advisers would not refuse to give it their attention. Seeing many literary and scientific men around him, he thought it not unbecoming to make a suggestion which might perhaps ripen into a practical result.

We hope it may do so. It is not the first time that we have urged the want of such an institution as should enable the sovereign to bestow a mark of honour on men who in arts, science, philanthropy, or literature, have deserved well of their country.

THE COST OF THE NEW LAMBETH WORKHOUSE, AND THE RISE IN BUILDING MATERIALS.

THE Lambeth new Workhouse, near Kennington-lane, which has been for some time in course of erection, and is now nearly completed, is likely to cost very considerably more than the originally estimated sum, which was under 20,000*l.*, but which has already been exceeded by about 5,000*l.*, the outlay amounting to 25,000*l.*, and it is now found that a further sum of 5,000*l.* is required. The board recently desired Mr. Parris, the architect, to inform them what further sum might be required to complete the building, and at their meeting last week a communication was read from the architect in reply, to the effect that he was not in a position to state the amount which would yet be necessary to finish the building. He, however, recommended that application be made to the Local Government Board for permission to borrow a further sum of 5,000*l.* He explained that this sum was required to meet the expenses of articles contracted for since the last loan, and was also caused partly by the unprecedented rise in the price of all building materials. The board at once agreed to comply with the architect's recommendation.

ENGINEERS AND THE HEALTH ACT.

SIR,—Some few months since I think I read in the *Builder* that the "Public Health Act, 1872," would find plenty of work for the engineers. I quite agree with that opinion if the Act is properly carried out. I, however, do not think that the authorities are offering sufficient inducements for any civil engineer to undertake the duties as laid down by the Local Government Board. I inclose two advertisements (taken from the *Local Government Chronicle*), in which you will find that after the person who may be unfortunate enough to be appointed has paid his expenses, he will have something like 20*s.* per week left for his services. May I ask if you consider that an ample salary to be paid to a duly-qualified man?

E. R. B.

SIR G. G. SCOTT'S LECTURES AT THE ROYAL ACADEMY.*

ON THE DOME.

IN my last lecture, after bringing down our consideration of domical construction to the period of the perfecting by the Byzantine architects of the system of what are known as "Pendentive Domes," I was proceeding to describe a few of its most marked productions, but was stopped short when I had given a rapid sketch of the most wonderful of its creations,—the Church of St. Sophia at Constantinople.

I will now proceed with my subject. After the Church of the Holy Wisdom, all subsequent domed churches of the Byzantine class seemed to shrink from a hopeless competition, and to content themselves with very moderate dimensions.

Among those remaining at Constantinople, that of St. Irene perhaps comes next in date. Its central dome, like that of St. Sophia, is flanked by arcaded aisles which, however, do not extend to the vaulting, but simply carry galleries. These wings, therefore, as well as the eastward extension, are covered by barrel vaults, the latter being terminated by a semidomical apse,—while westward is a second dome, like the central one in plan, excepting that, being less in dimension east and west, its base is an ellipse instead of a circle. The actual domes, however, differ much more widely; for, while the western one is a flat disk continuing the surface of its pendentives, the central dome is raised above them on a high drum pierced like a clearstory with many windows.

The Church of the Holy Theotokos, or of the Mother of God, is of a much later date. The church proper has but a single dome, though there are several others over the narthex. This dome covers the intersection of two barrel vaults, is supported simply on four columns, and rises high above its pendentives on a drum pierced by windows. The architecture of this church is very elegant, differing in date, it is probable, but little from that of St. Mark's at Venice. Others do not differ sufficiently from these types to make it worth while here to describe them. It may, however, be mentioned here that in the later Greek churches the domes, or some of them, rose often so high as to become rather elegant towers, arcaded externally. This is the case with several of the churches at Athens.

Among the churches of that city we find one type of great elegance, the Church of St. Nicodemus, in which the dome occupies the width of what we should call the nave and its aisles; each side of the square over which it stands being divided into three unequal arches, over which it rises on a lofty drum, and is carried on eight pendentives. This forms a most elegant interior, susceptible of many varieties; and, from the spacious central space which it affords, seems the most valuable type on which to found a domed design for a modern church.

It would, however, be endless to enumerate the varied forms of domed churches in the East, though, with all their varieties, they may usually be reduced to a few elementary types. If you desire to study them, I would recommend to you Salzenberg's "Old Christian Architecture at Constantinople," Couchaud's "Byzantine Churches in Greece," and Texier & Pullan's "Byzantine Architecture."

It is not, however, in the East alone that the Byzantine dome is to be found, even in its earliest days,—those of Justinian himself. It established itself equally at Ravenna; indeed, as we have seen in the Baptistery there, as well as in the tomb of Galla Placidia, it, in an early form, preceded those at Constantinople itself. Its great effort, however, there was the Church of San Vitale, erected by Justinian and Theodora. This church was evidently imitated more or less from the Temple of Minerva Medica, though whether directly or through that of St. Sergius at Constantinople can hardly be judged. It is a grand octagon, with a spacious surrounding aisle of double height. Seven of its sides have the same circular niches projecting from them that we find in the temple (as well as in the Church of St. Sergius), only they are arcaded and carried out with purely Byzantine details. The aisles are of two stories, united behind a lofty arcade. This is surmounted by a clearstory encroaching, to a certain degree, upon the dome. This, however, is not pendentive. It is covered externally by a roof. It has undergone much modernisation, but retains its general form and a good deal of its ancient decorations, which show it to have been treated much as St. Sophia, with which it was contemporary. The church is the more interesting from having been the type followed three centuries later by Charlemagne in his famous church at Aix-la-Chapelle.

The manner in which the dome was introduced and adopted in Italy during these ages was so diverse in its causes and its results as to cause it to be very perplexing to chronicle it in any clear consecutive order. There were, in fact, two distinct influences, both occasionally leading to its adoption.

At Rome, and in places under Roman influence, such examples as the Pantheon could not fail to have their effect on the subsequent architecture, and we accordingly find there numerous scions of this primæval family; while, as we have just seen, the purely Byzantine form was simultaneously introduced by way of Ravenna, and later on was planted at Venice.

Through this twofold influence the dome became very frequent throughout Italy. It was carried, as we have seen, by Charles the Great, from Ravenna to Aix-la-Chapelle, and, later on, was carried forward from Lombardy, under the first three Othos, across the Alps, down the valley of the Rhine, and far into the interior of Germany. Only a few years later it was conveyed from Venice into the interior of the south-west of France, whence it spread throughout an extensive district stretching eastward into Auvergne, and even as far as Lyons, and northward to the banks of the Loire, where, to this day, the effigies of our early Plantagenet kings lie, beneath a series of pendentive domes, almost as perfect as if at Constantinople.

I will not dwell at much length on the domes which were derived from purely Roman traditions, because they, for the most part, suggest no new type or development.

The most magnificent, probably, is that of the Baptistery at Florence, a noble work of early, though unknown, date. It is clearly founded in a great degree upon the Pantheon, though of octagonal plan, and with a dome of the same form. Its sides are in two stories,—the first

* See p. 217, *ante*.

with deeply-recessed colonnades on each side,—the upper stage, a clearstory. One face, however, is occupied by the arch of the sanctuary.

The dome had formerly an eye like the Pantheon, but has now a lantern turret. It is encrusted with beautiful enamel mosaic work, with an infinity of figures, the side over the sanctuary having a colossal figure of Our Lord in Majesty in a vesica. The architecture is of marble, and the pavement is tesselated work. The whole internal effect is beautiful and impressive in the extreme.

A parallel work is the Baptistery of Parma, a work of the twelfth century. It is polygonal in plan, and greatly inferior to that at Florence. The Church of San Tomaso in Limine, near Bejamo, is simply like an ordinary Templars' Church, with a hemispherical dome over its clearstory, and a turret rising from its apex. San Stephano, at Bologna, is in some degree on the same type.

The greater part of the Italian domes of these periods, and of this class, simply cover the crossing or the central tower of a cruciform church, and exhibit no important development.

The most original, perhaps, is the dome of the Cathedral at Sienna, which stands upon six piers, forming a hexagon, each side of which is equal in width to the nave and choir. In the next stage, the angles are corbelled out so as to form in the upper story a dodecagon, which form is followed out in the dome.

The merit of this plan is that it unites itself, with little obstructiveness, with the church on all sides of it, and opens out in its centre a space of double the width of the nave. It is also pleasing and elegant in its effect. But it is time that we returned to the Byzantine type, which you will remember that we left at Ravenna to follow out this digression.

We now adjourn from Ravenna to Venice.

The mercantile and perhaps political connexions of the old Venetians were mainly *Oriental*. This probably accounts for their architecture, up to the twelfth century, being *Byzantine*.

The Church of St. Mark, or the Chapel of the Doge's Palace, was founded in the ninth century, in honour and for the reception of the body of St. Mark, which had been procured from Alexandria, when the church in which it had been long deposited was destroyed by the Moslems. This church, however, perished in a popular tumult, late in the tenth century, whereupon the Venetians set about its reconstruction with a determination to render it one of the finest and most sumptuous in existence. All the East, so far as accessible to their ships, was laid under contribution for columns and other architectural embellishments. The design is often spoken of as founded on that of St. Sophia. This was not the case. The Church of the Apostles at Constantinople would rather seem to have furnished its model. It consists of a group of five square spaces, covered each by its pendentive dome. Its peculiarity lies in the breadth of the wagon-vaults which support and separate these domes, which is so great that the vast piers which sustain them are pierced in two stories, and divide each other into four piers, with a vaulted space between them. Each dome is consequently the centre of a cruciform space, the wings of which have wagon-vaults. The only exception is the east end, where an apse is substituted for this space, and out of this apse spring three minor ones, as at St. Sophia. Each dome is about hemispherical above its pendentives, and is pierced with windows, as at St. Sophia.

The domes are now, and have been for many ages, covered over by lofty domical towers, of timber, each surmounted by a sort of turret on its apex. The wings which flanked each domed space, bounded as they were by the perforated piers, were so suggestive of side aisles that the builders, familiar, no doubt, with aisled churches, added arcades from pier to pier, both in the nave and transepts. These, however, are merely decorative, supporting no galleries, as is frequent in the East, and only serving as narrow communications, equivalent to triforium passages, between the upper chambers in the great piers.

The entire church is internally encrusted with richly-coloured marbles and gold mosaic, with figures, just as at St. Sophia's; and the floor is of marble and porphyry tesselation, varying in scale from the most vast slabs to the finest mosaic work.

The interior was no doubt a joint imitation of St. Sophia's and the Apostle's Church, rivalling the former in its sumptuous decoration, and imitating the latter in its plan.

To those who have not visited the East, this interior gives a very faithful idea of the splendour of a Byzantine church, and I must say that I have myself seen nothing more impressive.

I will only further (before proceeding to another branch of my subject) notice one other church,—the little church of Santa Fosca, on the island of Torcello, close to Venice. This church is not domed, or has only a wooden dome, but was clearly planned for a proper domical covering. Its plan is like that of St. Nicodemus, at Athens, already alluded to, and is perhaps one of the most beautiful in existence, and one best adapted of all domical arrangements to modern use. Before I proceed further I must call your attention to a fresh step in advance.

The next step in the development of domes is the adoption of *pointed* arches for their support, often accompanied by an increase in the height of their own section beyond that of a semicircle.

The fact that the pendentive dome is, as it were, suspended in mid-air, so that a perpendicular line dropped from any part of its circumference passes through empty space, renders it imperative that the arches which sustain it in this airy position should be extremely strong, and should have as little outward thrust as possible; and it is equally desirable that the courses of stone forming the pendentives should not form very acute angles with the haunches of these arches. These considerations seem to have led the Mahomedan architects soon to substitute *pointed* arches for *round* as the supports of their domes; a step in which they were followed at a later period by the greater part of those western European architects who adopted the pendentive dome. There can be no doubt that this was a very advantageous change. Mr. Fergusson says,—"A little reflection . . . . will show how difficult it is to adapt the curves of a pendentive dome to a circular arch, and how weak the arrangement is when done. . . . . With a pointed arch, however, even when the pendentives follow its lines, there is some thickness in every part, and no curve need slope forward at a greater angle than 45 degrees."

On the other hand, the change was attended with the loss of geometrical accuracy. Hitherto we have dealt with none but perfectly correct geometrical figures; but, the moment the pointed arch is introduced, the pendentives lose this exactitude, and have to be adapted by what is vulgarly called "rule of thumb," to conditions not precisely suited to their forms. A pendentive between pointed arches has, it is true, a geometrical form of its own, but this is so awkward in its sections, that it has only to be seen to be rejected; for, instead of its central section being a regular arched curve, suited to a domical surface, it is a curve of *double flexure*, its lower part concave (as seen from within), and its upper part convex—in short, *an ogee*. This being inadmissible, the curve has to be accommodated the best way we can, so as to avoid this weak and unpleasing form. We have, in fact, to determine, according to the best of our judgment, what shall be the vertical section of the pendentive, and adopt such horizontal curves for the courses of masonry as will make it reach the extrados of the supporting arches in the easiest manner we are able. This was really done so successfully by the French architects, whose works I shall shortly have to describe, that, for myself, I must say I never found out the difficulty from seeing them, and was unaware of it till I worked out the profiles geometrically.

After all, however, it is only parallel to what we have to do in filling in the spaces between the ribs of Gothic vaulting.

The pointed arch, though beautiful and practically excellent, is no regular geometrical figure, but the union of portions of two; its use, consequently, induces irregularities which would be at once avoided by the substitution of an ellipse. But, then, our geometrical accuracy would be purchased by the sacrifice of beauty.

All the sections of a sphere being circles, the supporting arches of a true pendentive hemispherical dome are semicircular arches, and in the same manner those of an elliptical spheroidal dome would be semi-ellipses; but there is no regular solid figure, more than one of whose sections are pointed arches, so it is natural that when they are used, some part should have to be accommodated to fit them.

It may, however, be as well at this point to mention that pendentives, after all, had become mere rudiments of a form which had lost its original intent. Ever since the dome ceased to have the same curvature with its pendentives, and to be a continuation of their surface, the latter had become a mere form of *corbel*, for which any other variety might at convenience be substituted. This fact was amply acknowledged in every region where the dome was made use of; so that from the Pillars of Hercules to the Bay of Bengal, and among those who occasionally adopted and developed upon Byzantine ideas in Western Europe, we find all forms of corbelling used in addition to the typical pendentive. I shall presently have to show you some of these varieties, and will only now remark that, though they are perfectly legitimate means of support, the pendentive has still the advantage of them in its simplicity and in its superior adaptation to coloured decoration.

About the beginning of the eleventh century, the Byzantine style, in all its integrity (excepting only in its richer decorations), was conveyed into Aquitaine, as it is supposed, by Venetian merchants, who at that time had extensive commercial establishments in that part of France.

The earliest work carried out under this semi-Byzantine influence was, so far as we know, the Church of St. Front, at Perigueux,—a building obviously copied from St. Mark's, at Venice. The two churches are, in fact, nearly identical in their plans and sections, the one being an almost unadorned copy of the other, showing us what St. Mark's would be if stripped of its marble encrustations and its mosaics.

There is, however, *one* important difference, and one which bears directly upon the foregoing observations:—The domes at St. Front, as well as the great arches which support them, are *pointed* instead of *round*, though all the minor arches retain the older form. This agrees with what I have stated in my earlier lectures, that the pointed arch was introduced, not so much as a matter of *taste* as of *construction*. Thus, in the buildings in which it first appears, we usually find it in the arches carrying towers, in the wider vaulting, and in other positions where great weight had to be sustained before it made its appearance in minor features.

Here, at St. Front, we have it appearing at a date a century and a half earlier than in our own country, and used solely in the parts where the constructive necessities were the most urgent.

The style once transplanted into this region,—widely separated though it was from all its previous seats,—seems to have seized powerfully upon the public mind, and to have become, within a century, the nucleus of a new form of architecture, of very great beauty and interest, uniting the domical construction of the East with the Romanesque, and the Early Pointed architecture of the West.

The entire district, some 200 miles in extent, adopted the dome as its acknowledged form of vaulting, but nearly always supporting it by the pointed arch, and usually adopting it as the section of the cupola itself.

At Souillac we find a nave, apparently nearly as early as St. Front, covered by a series of pointed domes supported by massive transverse pointed arches, and terminated by a semi-domical apse, all carried out with scarcely an attempt at architectural detail.

At the Church of St. Stephen, at Perigueux, commonly called La Cité, we have an imperfect early nave of simple character, with one remaining of its domes, but to the east of it stands a later compartment, in which the same construction is carried out with very fine architecture, agreeing in character with our own transitional style.

This brings us to the new development; for the style now ceases to be Byzantine. It is very noble Gothic, united with domical construction.

The enlarged copies from my sketches of this and St. Front serve to show the greatness of the change,—the one a rude transcript of St. Mark's, without its decorations,—the other a noble interior of the transitional style, but with a pendentive dome; and it will be seen that this addition in no degree clashes with the style into which it is adopted.

At Angoulême we find this development carried out to full perfection. We have there a complete cruciform church, precisely in the style of the work last-named; the bays of the nave almost exactly like it, but the crossing rising to a far greater height, with a sort of drum forming a clearstory over the arches, and imperfect pendentives, and bearing the

dome aloft. I also give an enlarged copy of my sketch of this noble interior.

I may mention that this dome is not circular in plan, but that the middle of each side is flattened.

A very parallel arrangement exists in a church far more to the north, on the banks of the Loire, and one in which we, as Englishmen, are specially interested, as being the burial-place of our earlier Plantagenets. I refer to the Abbey Church of Fontevrault.

This church has four domical bays to the nave almost identical with those at Angoulême. The church is now a prison, and in some obscure portion lie the beautiful effigies of King Henry II. of England and of Eleanor of Guienne his queen, of Richard Cœur de Lion, and of Isabel of Angoulême the queen of King John, and mother of the rebuilder of Westminster Abbey.

There are in this district of France fully forty domed churches, so I will content myself with those I have alluded to; my main object being to show how perfectly compatible is the cupola with Gothic architecture.

The influence, however, of the dome extended, in France, far beyond the district in question; for we find it spreading eastward into Auvergne, and beyond that again to Lyons.

In Auvergne, it usually covers the intersection of cross churches, beneath the tower; at Le Puy it is used in a very unusual form to cover, not only this central space, but the bays of the vaulting.

The nave is divided into oblong bays by transverse arches, and the intervals are reduced to elongated octagons by corbels, doing duty for pendentives, and these octagons are domed over on the angular system. The same form of covering exists at Ainay, near Lyons.

I may mention that the pendentives in many of these French churches give place to corbels of varied design, as at Monthron, near Angoulême, Notre Dame du Pont at Clermont, Notre Dame des Dons at Avignon, and very many others. The last-named dome rises into a beautiful tower, and I may mention that small lantern turrets are common upon the Aquitainian domes.

I will not dwell upon the German domes because they do not illustrate any special development. They seem to have been the offspring of those Italian domes which followed Roman traditions. They mostly cover intersections of cross churches beneath central towers. Those at Aix-la-Chapelle and Nimweguen are of the ordinary type of domes covering octagonal buildings. That at Worms covers a square, but is by corbels brought out to an octagon, and then domed in that form.

In our own country, I know of no nearer Mediæval approach to the cupola than the semi-dome covering the apse of the chapel in the Tower of London.

The last form of dome which I will allude to is what may be called the *modern* type. It does not differ in essentials from what may be found among those of earlier periods, but is distinguished from them by several of the elements which it possesses in common with some of these, being developed on a larger scale and becoming more pronounced and more essentially characteristic.

This type of dome is:—1. Raised high in the manner of a tower; 2. The dome becomes an important external feature; 3. It is crowned by a smaller tower rising out of the dome; 4. It usually assumes internally the form of a lantern, with a range of windows beneath the dome; 5. In some instances the external and internal domes are independent structures, the former acting as a roof to the latter, with, perhaps, an intermediate structure to carry the culminating tower on its apex. Now, *every one* of these features is to be found in earlier domes.

The raising of a dome upon a drum or tower is common both in the East and West. In many instances, and especially in Mahometan buildings, the dome becomes an important external feature. The crowning of the dome by a small tower or lantern on its apex is frequent among the early domes of Northern Italy, and is seen on the five domes of St. Front at Perigueux, and, in a different form, on its prototype at Venice. The internal range of windows beneath the dome is found both in the true Byzantine districts, in Italy, in France, and in Germany; and, finally, the independence of the external and the internal domes,—the former becoming the roof to the latter, with even the intermediate structure to support the culminating turret or lantern,—is found in its full integrity in St. Mark's at Venice, where its early date is proved by its being represented in the most ancient of the external mosaics.

Why, then, if all its essential characteristics are to be found in ancient examples, do we call this form of dome "*modern*"? I would reply that, though its elementary ideas were old, their systematic combination, and the vast scale on which they were worked out, is due to the architects of the Renaissance. It is, in my opinion, their greatest achievement, being the union of the Classic with the Byzantine and the Mediæval ideal, and the working of them into a feature which no previous style had produced in so complete a manner or on so noble a scale. In saying this, however, I do not intend to praise this, as being as an internal feature superior to the true Byzantine dome; on the contrary, I think it a less reasonable and an even less beautiful covering, because it is raised to so vast an elevation as not to be visible at any natural angle of vision, nor to become a part of the general internal view of the building. It must, however, be confessed that, *when seen*, it is of wonderful and almost magic aspect; while externally it produces a nobler form of tower than is to be found in any previous development. I do not think it in any degree belongs essentially to the Renaissance, though it chanced to be developed under its influence. On the contrary, the first complete type of this form of dome (though happening not to be pendentive) was designed as the completion of a Gothic structure, and its only serious fault is that it was not carried out with more perfectly Gothic detail. I refer, of course, to that of the Cathedral at Florence.

That structure had been carried out during the fourteenth century,—*all but its cupola*,—from the design of Arnolpho and his successors. A dome equal in space to that now existing was prepared for, but various causes delayed for a century its actual erection; so that, when it was at length undertaken, the prevailing style had changed. It is probable that Arnolpho intended to have sprung his dome at a far lower level, and to have made it like that of the adjoining baptistery; perhaps not exhibiting externally its domical form. Brunelleschi raised the drum to a considerable height,—exhibited his dome as a vast external feature,—and crowned it with a culminating lantern, thus giving us at once the leading features,—and that on a scale never since exceeded, of what I have called the *modern* type of dome. Had he made its details more accurately to harmonise with those of Arnolpho's structure, his work would have been perfect. Not only is his dome erected on Gothic walls and arches, but its section is a pointed arch, so that in all but its decorative features,—and in these in some degree,—it is essentially a Gothic dome. It is not, however, pendentive, nor is it circular in plan,—and though opening by arches into the arms of the cross, it is after all merely the covering of an octagonal chamber, so that its claims rest more on its size, its height, and its external beauty, than any novelty of development.

Of its successors the name is legion. It would be useless for me to attempt to enumerate even the most successful of them. I will, therefore, content myself with a brief description of the two most typical—those of St. Peter's at Rome, and of our own St. Paul's.

I am not aware of any dome of great scale erected in the interval between Brunelleschi's dome at Florence, and that of Michelangelo at Rome. The latter, however, was the crowning result of the efforts of successive architects, especially of Bramante and Sangallo. In one sense it does, and the other it does not, show evidence of this lengthened period of development. Its unity of design would bespeak it as the work of one master-mind, while its perfection may mark it as the result of oft-repeated trials.

Though founded in idea on the dome at Florence, that of St. Peter's differs from it in many most important and essential particulars. In the first place,—while that at Florence is supported from the very floor upon an octagonal wall merely pierced by comparatively narrow arches, that at St. Peter's is essentially a *pendentive* dome, rising from four colossal piers which give it a square base, and united with the four arms of the church by arches, or rather *vaults*, of vast span. These arches, it is true, are not so wide as to reduce the pendentives which rise from between them to triangular forms, but are set so far apart as to leave a portion of the ideal circle between them, and to give the pendentives a horizontal base. This was necessary to give strength to the piers for the support of so gigantic a structure, but in no degree interferes with the pendentive character of the dome.

Again, at Florence the octagonal wall rises to the very base of the dome, while at Rome the drum, from the pendentives upwards, is circular. At Florence it is pierced only by rather ungainly circular windows, while at Rome it is colonnaded within and without, and beautifully decorated within. At Florence the dome is of that doubtful kind which has straight sides, carrying up the octagonal form to the very top, while at Rome the dome is circular and perfect. Both are in some degree alike in construction, being *double*, with a space between, not two domes, as at our St. Paul's, but one dome formed of two shells partially connected; a mode of construction well suited to the support of the crowning lantern.

Both domes are founded in their section on the pointed arch. Their internal span is nearly the same; but their proportions differ greatly; for, while that at Florence is internally only two of its diameters in height, that at Rome is two and a half: and while the former is externally one and three quarters of its diameter in height, the latter is two diameters,—each irrespective of the lantern. Strangely enough, however, the great external defect of the dome of St. Peter's is its want of height. It is so encumbered by the surrounding building, that its height, from near points of view, is greatly lost. Like the mountain,—which seems to be its prototype,—though towering nobly in the distant view, it becomes as you approach it entangled among the nearer though smaller heights. This is obviated at Florence,—at least from the eastern points of view,—by the more favourable distribution of the subordinate buildings.

The boast attributed to Michelangelo—that he would raise the Pantheon upon the top of the Temple of Peace,—has more meaning than at first appears. The Temple of Peace (so called), now known to have been the Basilica of Maxentius, consists of a vast nave with aisles. The nave is divided into three square bays of between 80 and 90 ft. in width, and these bays are groined. Had the pendentive dome been then known, each bay might have been covered by such a dome as that which spans the central bay of St. Sophia, and in such a case the *dome* of the Pantheon might, in loose language, have been said to be placed upon four piers and four arches of the Temple of Peace. But Michelangelo aimed at much more than this. It was not the *dome* only, but the *whole structure* of the Pantheon, which (in a figure of speech) he thus intended to raise upon a square substructure open on all sides to view from other parts of the interior. Thus he raised upon his pendentives what he compared to the *circular wall* of the Pantheon, and *on that* he raised its *dome*. This was not, however, the whole of his task, for over the eye of the dome (as of the Pantheon) he erected again another structure—a domed rotunda,—into which the eye reaches from below, and through whose windows the light penetrates into the dome. And, *more than all this*, instead of allowing his dome, as in the Pantheon, to be half buried within the walls of the building, he made it rise boldly from their upper surface, and gave it such a proportion as to render it an august and beautiful object from every point from which it is visible.

The task was *indeed* one of which the greatest genius might fairly boast!

Nearly every subsequent dome of any magnitude seems to have been founded, more or less, upon St. Peter's; and, so far as I can judge, our own St. Paul's is the noblest of them all.

The dome of St. Paul's is clearly founded on that of St. Peter's, though subject to extensive changes. The objects of these changes seems to have been threefold: 1st., to render it more conspicuous externally, especially from near points of view; 2ndly, to avoid disproportionate internal height, which was the more desirable from the smaller size of the openings through which the interior is viewed; and 3rdly, a desire to substitute *eight* arches and pendentives for the *four* at St. Peter's. The two former motives acting together led to the greatest peculiarity which this dome possesses, viz., it being, in fact, *two* domes, one to be seen internally, and the other externally, with the consequent necessity for providing some independent means for the support of the culminating lantern. In this case, the proportions of the interior and exterior are alike, each having two of its own diameters from the base to the top of the dome. The external height is consequently equal in proportion to that of St. Peter's, while its internal height is half a diameter less.

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We have seen at Florence and St. Peter's that the domes consist of a double shell, connected at intervals by ribs,—a very excellent method of supporting a lantern when necessity demands so difficult a piece of construction as its direct support by the dome itself. The space, however, which Sir Christopher Wren left between his external and internal domes rendered this constructional effort needless. He accordingly provided for the load on the apex by a mere *cone* of brick intervening between his domes, giving it a threefold structure, a dome proper within forming the covering of the church below, a cone of brick above this carrying the lantern, and a dome of timber over that, to give comeliness to the exterior, and to serve as its roof.

This expedient, certainly rather complicated, has been very differently dealt with by critics, some extolling it as an original effort of genius, while others have decried it as artificial and false. Neither party have, as I think, full justice on their side. In the first place, it is *not* original, the same principle having been, centuries before, acted on at St. Mark's, Venice. It is true that, in that case, not the external dome alone, but the lantern, with its supports, are all of timber. This does not, however, alter the principle in the least; for we have the threefold structure,—the dome proper, the supports of the lantern, and the external dome, just as at St. Paul's, as a glance at the sections of the two will at once prove. In more recent structures iron supports in the lantern have been substituted for the brick cone, bringing it still more nearly to the type given by St. Mark's. In the second place, I hardly think, with this Mediæval precedent before us, we need be so squeamish about the expedient being artificial. We constantly find double coverings to our ancient churches,—the vault to be seen within and the roof without; and if we desire to place a flêche riding upon the roof, we support it by constructions concealed between the two. This is precisely what Wren has done. The only difference against him is, that his roof is domical, and suggests to the thoughtless observer that it is the same which he sees within,—a mere peccadillo, after all,—and amply atoned by the fact that you gain by it the power of giving due height both within and without, and avoid the difficulty and danger of supporting a massive structure of stone, as large as some church steeples, upon the apex of a dome. Anyhow, public opinion has decided in favour of the expedient, for a majority of subsequent domes are constructed on the same principle; while I almost defy an architect now designing a dome and experiencing these two difficulties—1. The artistic difficulty of making the same dome look well from within and without; and 2. The constructive difficulty of balancing a steeple on the top of his dome,—to resist the temptation presented by this simple expedient; and the more so when conscious of having for it a Mediæval precedent.

The dome of St. Paul's is externally perhaps more successful than any other. Internally, it is good from the supporting arches upwards, excepting that it is damaged by the unreasonable system on which its painted decorations have been designed.

The arches below are, however, an exception to its claims or our praise.

The scheme on which the plan of the dome and its accompaniments is set out in St. Paul's is totally different from that in St. Peter's. In the latter, the space beneath the dome is penetrated by the nave and transept alone, irrespective of their aisles, which stop dead against the piers of the dome. In the former, the same space is penetrated both by the nave and transept, and their aisles. To take another view. In St. Peter's, the square occupied by the dome, and its piers, is surrounded on all sides by an aisle low in the angles and lofty in the centres of the sides; or, in other words, the aisles failing to penetrate the dome branch round its angles, while those of Sir Christopher Wren pierce directly through it.

St. Paul's has externally the advantage of the great corner piers rising from the ground, unencumbered by surrounding buildings; but internally grandeur is sadly lost through the smaller span of the large supporting arches; the want of bold simplicity in the piers, by the meanness and irregularity of the smaller arches, and the confusion caused by the mode in which the portion above them is arranged.

Externally, however, the outline of this dome is perhaps unequalled; and, even internally, if you look at general effect, and close your eyes to defects in detail, the impression produced is grand in the extreme.

I have used up all the time at my disposal without having even reached one of the greatest classes of domical structures,—those of the different Mahommedan nations, from Morocco and Southern Spain, by Egypt and Turkey, to Persia and India.

I the less regret this because I leave it wholly untouched for some one better acquainted with it than myself to take up: I will only offer two remarks upon it. The first is, that it is wholly an offshoot of the Byzantine style which was first adopted, and then developed upon by the infidel conquerors. The second is, that it is throughout, or nearly so, carried out with the pointed arch, and most usually with corbels instead of pendentives, giving in these two directions an extension to the developments which took place in Western Europe. I may also mention that, in splendour of decoration, it is impossible to conceive anything to go beyond it; though it is a style which seems alien to our Western and Christian prepossessions.

We have seen that the cupola,—the noblest of all architectural features,—has belonged by right to Roman architecture; was continued in the same style when it became Christian; was wonderfully developed in the Eastern and Christian Roman Empire; was continued in the Middle Ages in Italy, and transplanted into Germany and France; that it was taken up during the early days of the Renaissance from the unfinished Gothic Cathedral at Florence and, through that semi-Mediæval, semi-Renaissance graft, was thoroughly adopted into the revived Classic styles. What I now want to press upon you is, that it should be equally welcomed into our revived Gothic architecture. That revival needs but such a welcoming of all that is good and noble to render it *complete*, and no feature possesses these qualities in a higher degree than the cupola. Let us, therefore, make it *our own*.

I have myself made some few attempts at this, which I venture to submit to you.

The dome, however, without its appropriate decorations, is but the body without the soul. It is the sister art of painting which breathes life into the otherwise breathless form. This painting must, however, be adapted to its position with skill, knowledge, and study. I have not time left to dilate on this subject, but commend it to the students of that art, only begging them to remember that, while exercising their art upon an object like the dome, which has an essential form on which its very stability, real or apparent, depends, they *must* keep it in such subordination as not to disturb that essential, but rather to bring out and emphasise it; otherwise what I am urging will not prove a loving union, but a hostile collision, of the two sister arts.

OUR ANCIENT NATIONAL MONUMENTS.

SIR,—The time is now close at hand for the revival of the long-delayed discussion of the question on the best mode to effect the preservation of our ancient national monuments, and we may, with some confidence, I think, look forward to the Bill Sir John Lubbock has promised to introduce into Parliament. I have seen no draft of it; but I trust it has been well circulated among the numerous institutions throughout the kingdom, to call their attention to the subject, and to induce support to the Bill within and without Parliament. For many years this measure, professed by all to be desirable, has slept; for it is impossible to regard the communications made to Mr. Ayrton on the part of the Society of Antiquaries as indicative of what is generally understood here and in France by "ancient national monuments"; and I am not aware that any decided and effective steps have been taken by public bodies either in support of Sir John Lubbock's scheme or independently of this patriotic antiquary: as in other matters, so in this, what is everybody's business is nobody's.

The nearest approach towards a Government recognition of the necessity for some comprehensive scheme for saving what yet remains of our ancient national monuments was when the co-operation of such men as Sir Robert Inglis and Mr. Hume was secured to endeavour to obtain a Commission to investigate the subject thoroughly and comprehensively. A dissolution of Parliament suddenly checked our efforts and damaged our hopes. Then was formed the British Archæological Association, chiefly to impress upon the Government the importance of preserving the remains of ancient national art for the public, and to aid in advancing and illustrating historical education. Not only were cathedrals and churches, with their monuments, comprehended in the notions and plans of the founders of this popular and prolific institution, but the various primeval remains strewed over the kingdom, unprotected, were regarded equally with the sacred works of art supposed to be already under the safe-keeping of the clergy. The vast extent of pre-historic earthworks, megaliths, sepulchral structures, British *oppida*, &c., formed a prominent feature in our plan for preservation; and especially so as many of them are daily exposed to destruction from being but little known, and consequently at the mercy of the ignorant and selfish who claim ownership over them. There was no notion of restricting conservation to "regal and other tombs and monuments in cathedrals, churches, &c.," such as seem to have exclusively engaged the sympathy of the "Sepulchral Monuments Committee" of the Society of Antiquaries, whose list and application Mr. Ayrton refused to recognise. But since the establishment of the popular archæological societies the destruction of our ancient national monuments, the Celtic *oppida*, the Roman *castra* and villas, churches and their sacred appendages, has gone on as usual, slowly and surely; and more has been saved by private energy and good feeling than by any combined remonstrances or collective demonstrations; and when a society has been propelled to plead for some important monument, such as, for example, the Roman Theatre at Old Verulam, Governments have ever turned a deaf ear to the petition.

It is not my wish, sir, to intrude upon your time and well-occupied columns a subject which, to be fully considered, would probably demand more than you could conveniently afford; but we may, I feel assured, reckon on your goodwill to assist in bringing Sir John Lubbock's proposed Bill into greater prominence, in order that the public may understand its provisions and objects; and that societies of archæological and literary character may be stimulated to petition Parliament on behalf of the Bill, and at the same time bring it under the consideration of members of Parliament to prepare them for the introduction of the Bill. C. ROACH SMITH.

ST. PAUL'S CATHEDRAL FROM WREN'S POINT OF VIEW.

AMIDST all the uncertainties of art in these days of progress and perpetual change, there are some few things luckily that always remain the same, and are certain. The almost *perfection* of Greek work is among these, and perhaps at the head of them. In sculpture, in architecture, and *drawing*, certainly, and it may have been in painting they were pre-eminent; but in nothing were they more singularly happy and thoughtful than in the *position* of their great temples and public buildings. This is a characteristic of Greek work which has as yet hardly been touched upon, and to do any sort of justice to it would be almost to write a volume. But to glance at it, we need but notice the admirable position, as a mere matter of planning, of the Pantheon, and its gateway of approach on the Athenian Acropolis. By referring to a plan of the Acropolis, it will be seen how admirably contrived the whole group of buildings was, and how, on approaching the famous temple, as the central object, you did so at an angle, and so saw at one view, and from the best possible point of view, the front and side of the matchless building. It was the very perfection of artistic and architectural judgment, and fine and noble taste. Not only was the building all but perfect, but the way to it, and the sight of it, were the best possible. Nor was this all. On great occasions, as on that of the Panathenaic Procession, those who composed it not only caught first sight of the temple at its best, *i.e.*, angularly, but they passed completely round it before reaching the doorway of the entrance, and its portico, with its flight of steps, its eight columns, its recessed columns, and its magnificent illustrative and instructive sculptures,—a written record in enduring marble, which but to see was to read. A *side* view was to the old Greek the best of views, and the most artistic. How different from our ways of doing things in these improved times. With us a "street-front" elevation is the one thing needful, and the way to look at a building is to stand right in front of it on the opposite side of the road, and in the middle of it,—the angle taking in the building

when bisected by a line from the eye to it,—is always a right angle with the line of the front of the building. This is the invariable orthodox way of looking at a street building, and any man proposing to view any such building from an angle of forty-five degrees from the front of it, and refusing to go further, and right in front of it, would most certainly be thought insane, or nearly so. But this was the old Greek's way, and he almost compelled you to keep away from the direct view of the front of his building till you were nearly under the portico of it. Thus was it with the Parthenon,—its architect *compelled* you to look at it aright and at its best.

We have been urged to these thoughts on the artistic methods of the antique Greeks, so far off from things that now are, and in all ways so different, by an accidental view, for some hours on successive days, of St. Paul's Cathedral from Sir Christopher Wren's own point of view,—indeed, from the windows of the house in St. Paul's-churchyard which Wren must have many times looked out of and at his work as it went on day by day. Indeed, the house we refer to is but a door away from the very house he himself lived in. What, then, did the great architect of St. Paul's *see* as its front and side elevations, the west and south, rose into completion under his very eye, and day by day? We can scarcely imagine it. So much nowadays is done by steam machinery, and by cut-and-dried and hackneyed processes, that all such work is alike everywhere. The same "plant" is used, and the scaffolding employed is reduced to its very simplest expression,—uprights, cross-pines, and a "traveller." But in Wren's days, especially under the eye of so ingenious a mechanic, the very scaffolding round St. Paul's and its great dome must have been a most complicated and ingenious mass of timber and hand machinery, almost as interesting,—mechanically, at least,—to look at as the cathedral itself. But our business at present is not so much with the mode of construction of St. Paul's, a subject yet awaiting a little cogitation by the way, but with Wren's special view of St. Paul's from his own window and point of sight. From an upper window of this house may perhaps be seen the very best possible, and most artistic and "architecturesque," view of the cathedral: a truly Greek view of it! The eye takes in the front and side *angularly*, and the dome rises from the mass of the structure with a picturesqueness that cannot be surpassed. Here we may notice one element in the designing or planning of St. Paul's which is noteworthy, and shows how Wren thought out his *plan*, with the "elevations" in his mind's eye at the same time. We refer to the angular blocks of masonry in which are the dean's vestry, the minor canons' vestry, the Lord Mayor's vestry and school, and the staircase to the whispering gallery, forming gigantic buttresses for the apparent support of the dome. A happy thought; and Wren, from his window, could not but see it, from the fact of his capital point of sight with the dome, and the structure on which it rests, both real and apparent, at their very best. In the many critical examinations of St. Paul's, we hardly think that the *sculpture* in it has been done full justice to, or, indeed, that the sculpture of Wren's time has been sufficiently examined and prized. It is, we think, worth all the study the student can bestow on it, and may well serve as an example to those whose fortune it is to fill our modern London with statues and sculpture. From his window Wren could get a good view of the figure-sculpture of St. Paul's, and must, of course, have seen each figure before it was hoisted into its place. Some of these are exceedingly fine, and being high up, and well out of the way, they have not suffered by painting over, as have the sculptures (St. Paul preaching at Berœa) behind the columns of the west portico, which were coated over many times with oil-colour. They are, too, unrestored, and so have great value, as showing the actual stone-cutting of the time in which they were executed. To give a list of them would occupy too much space; but one or two of them, as seen from Wren's point of quiet observation, may be of interest. The figures at the foot of the south-western tower are those of St. John and St. Luke. That at the south-western corner of it, just opposite our window of observation, is singularly fine. It represents the Evangelist St. John, seated, with the eagle at his feet.

The attitude and the whole expression of this figure are worthy of the place they occupy, and show how much Wren must have left the sculptor *to himself*, he probably regarding the sculptor as an independent assistant, with a responsibility of his own, and a personal and independent *credit* to gain or to lose. There is no evidence to show that Wren "designed," as it is called, much less executed, these figures: he simply provided fitting places in which figures might be afterwards placed, when his part of the work was executed. Indeed, just in the same way as the architect Setinus left Phidias, the sculptor, to his proper work, each getting the credit for his own, *but only his own*, work. You may see this from the street, but far more clearly from our window. You are nearer the work, and can see the individuality of the executive sculptor better and clearer. These figures afford, indeed, a lesson to us in our modern and every-day mode of work, and show what is possible. The figure in the opposite corner of the church, at the north-western angle of it, is, perhaps, a yet grander one, almost in the manner of Michelangelo, with magnificent drapery; but this cannot be seen from our window of observation. We may here observe, as we are so very close to it, that the clock cannot well be missed, being so large, and occupying so conspicuous a place as it does; but it does not mar or in any way get in the way of the architecture. A clock in a cathedral somewhere or other would seem to be a sort of necessity, both architecturally, and socially and morally, as marking to that vast majority who are without *portable* clocks Time's inexorable passage, waiting for no man!

It is impossible to catch sight of St. Paul's from Sir Christopher Wren's window, and to look at it as he must have so often done, without a thought of the *railings* round it, so irregular in outline, and placed there with such small consideration of their effect on the building which they surround. They are remarkable specimens of iron castings considering the time in which they were executed. They are very carefully and boldly designed, and contrast not a little favourably with the thin and meagre work which "railings" commonly now-a-days show. They form, with the *stone plinth* on which they stand, an indication of a "platform" on which the building should stand. The Parthenon stood on a rock platform, as on a solid basement. It adds not a little to the dignity of an isolated and regular structure. But in order that this effect should be as perfect as may be, the supporting platform should *harmonise in outline* more or less with the main lines of the structure which stands on it, and which it supports. Judging from *Greek* precedent and example, very great dignity indeed must accrue from the whole surface of the platform on which St. Paul's stands being retained, and its boundaries clearly defined by the stone plinth and railing. It may, as is obvious, be so altered in plan as for its lines to range with the main lines of the walls of the building. We could see all this from Wren's window with some clearness. We could not help thinking, too, of how differently, and how picturesquely, the *crowds* about St. Paul's must have looked in Wren's day. Picturesqueness and quaintness of costume add not a little to the artistic effect of a crowd. Our thoughts, too, travelled to old Venice and St. Mark's, and to Venetian crowds, and coloured costumes, and half-Oriental men, women, and children, and ways of life. Pictures in plenty,—no invention needed,—the painter might go to work on the spot, with but little in his mind's eye but the magic scene before him!

LONDON SCHOOL BOARD SCHOOLS, WILMOT-STREET, BETHNAL-GREEN.

THIS building, now in course of erection, is one of those for which designs were invited in limited competition. The successful design was that submitted by Messrs. John Giles & Gough, and is now being carried out by them without any deviation from the plans as sent in. The building is one of the largest yet contracted for by the Board, the plans being prepared on instructions to accommodate 1,520 children. There is, however, actual accommodation for nearly 1,600. Mr. E. Crickmay is clerk of works.

The entrance for the infants is in the centre of the building fronting Wilmot-street, and on the right of the buildings, and in Wilmot-street also is the entrance for girls, their play-grounds (which will be in one) being in the rear of the schools.

The entrance for boys is in the "New-street," entirely removed from the others, and their play-ground is distinct, and cut off by the care-taker's rooms, which it has been thought best to place adjoining the boys' entrance. A basement is provided under the care-taker's rooms and boys' entrance and stairs, for coal storage.

The ground-floor of the entire block of buildings right and left of their central entrance is devoted to infants.

The first floor on the right is devoted to 220 girls; on the left to 240 boys. Between these two is placed the manager's, or board room, convenient for access to either school, and reached by a small private staircase.

The second floor, on the right, is devoted to girls (as on the first floor), 220 in number; on the left, to boys, 240 in number. These are divided, as below, by a room to be used jointly for drawing-classes, having upper and north light. These numbers give the total of 600 infants on the ground floor; 480 boys on the first and second floors; 440 girls on the first and second floors also; each department in two distinct schools. The more detailed arrangements of the plan are as follow, viz.:—

INFANTS' SCHOOLS.

Right and left of the central entrance, and immediately adjoining a mistress's room, are the cloak-rooms and lavatories. The space provided on each side is alike, and is in school and class room in each case for 300 infants, allowing 9 ft. superficial for each infant.

The large school-room has a gallery capable of accommodating at least two-thirds of the infants, with side and high back light, together with a smaller gallery and a large clear space for marching.

The class-rooms enter in every case only from the school-room.

A class-room is provided for babies, and another for the most advanced infants, capable of being thrown together as directed in Rule 4 of the Board's "Rules" as regards infants' schools; and as this is a school of the maximum size, a third and larger class-room is in each case provided.

Each school and class room has in every case direct through-ventilation, and window space is also given.

The Graded Schools, as before mentioned, occupy the first and second floors of the block of buildings, the left of the centre on both floors being devoted to boys, the right to girls, and the arrangements of both floors in each case alike.

THE BOYS' SCHOOLS.

The plan on the first-floor provides for 240 boys, in six grades of forty each, in one principal school-room and four class-rooms; on the second floor for a similar number, arranged in a similar way.

Each class-room is entered only from the school. They are arranged to be thrown together in pairs, and all have side-light and through-ventilation.

The principal school-room has light at the backs of the boys, and windows opposite, at a considerable height, giving through-ventilation.

A stone staircase, without winders or open well-hole, gives access to these schools, and on the half space are the lavatories, and hat and cloak rooms, and between the two schools masters' rooms.

THE GIRLS' SCHOOLS.

The arrangements for these are similar to those for the boys, except that the fifth and sixth standards are taught in class-rooms, having only thirty instead of forty, thus giving the required number of 440 girls. The cloak-rooms are also somewhat reduced in size.

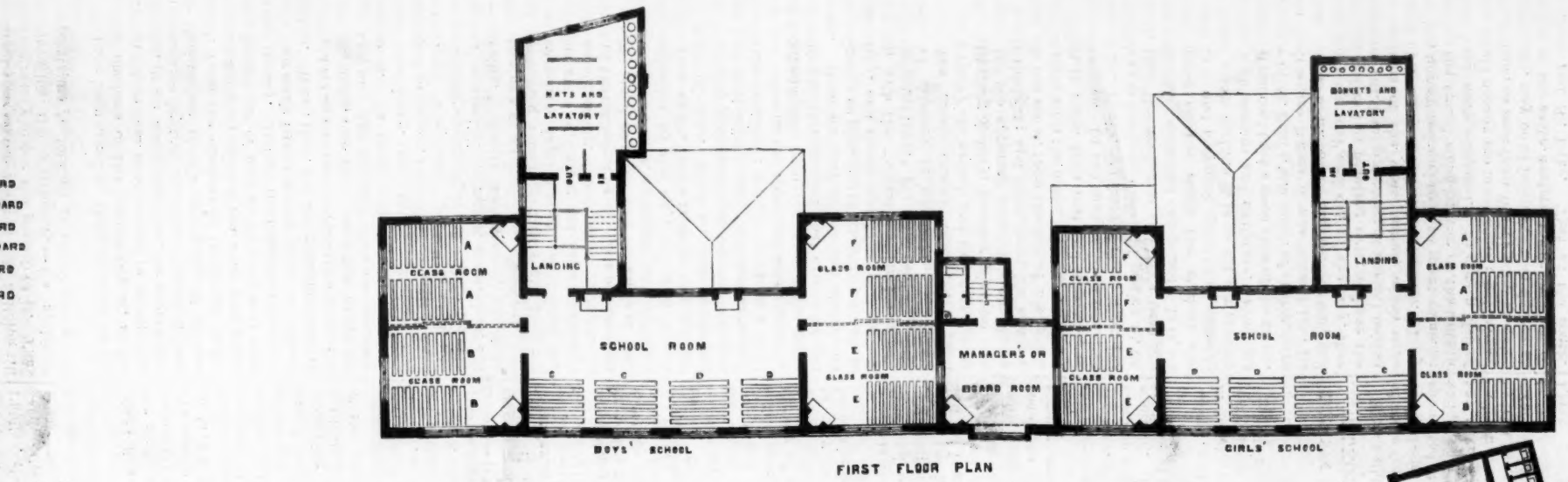
The school and class rooms, together for each child, 10 ft. superficial space has been provided, and in the school-room alone a little over 4 ft. superficial for the entire number of 240 or 220 respectively on each floor.

The warming will be by open fireplaces, in which will be fitted patent ventilating stoves.

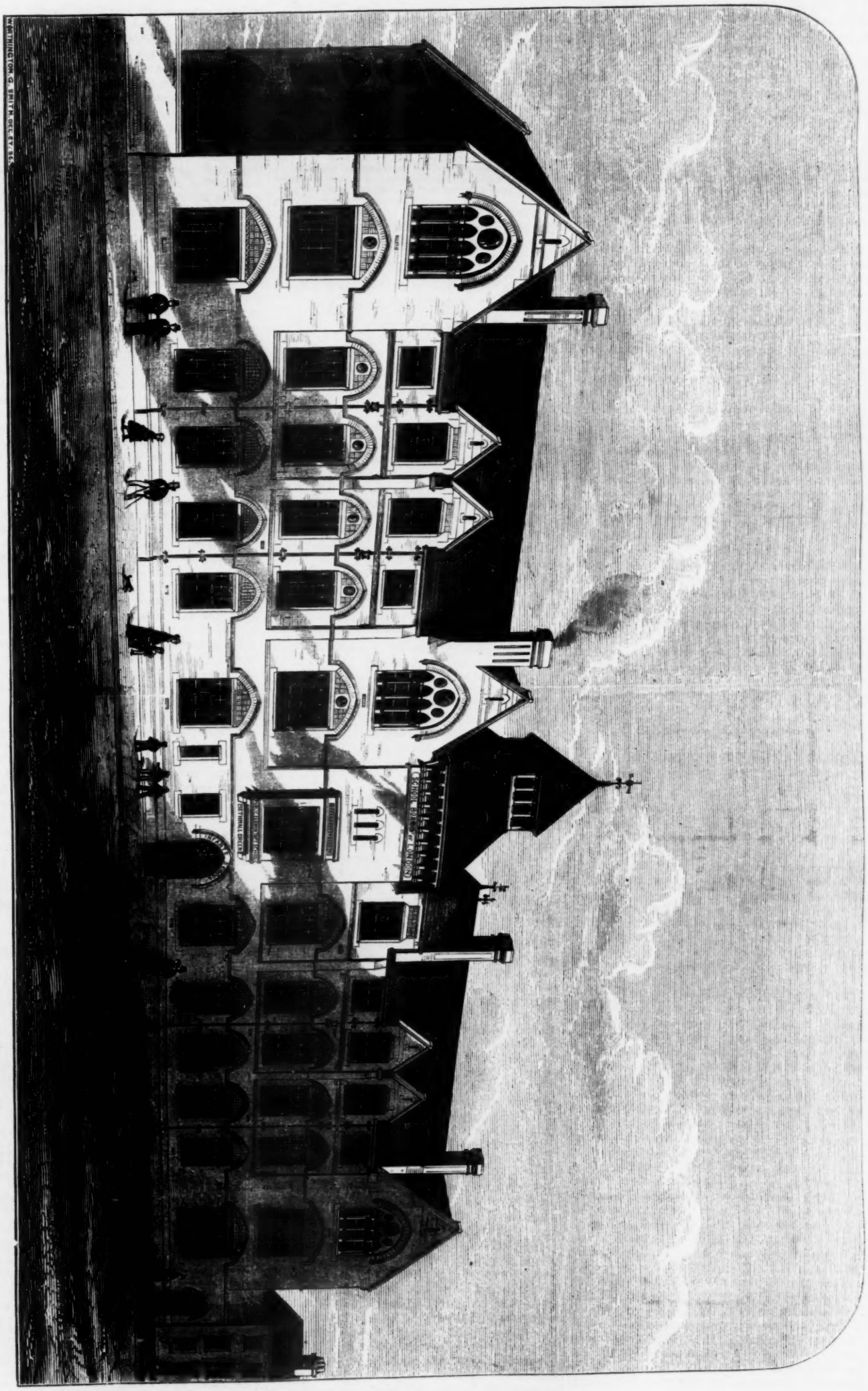
The materials will be stock brick, with red brick facing throughout, and moulded brick strings. Bath and Portland stone for heads and sills, &c.; roofs covered with Penmoyle green slates. The mullions and transoms are of fir, with casements hung to transoms to open down inwardly.

The cubic space of the entire building is 442,800 ft.; and the contract, including boundary-walls, play-grounds, &c., has been taken by Mr. A. Sheffield, of East-India Dock-road, for the sum of 10,389*l*.

A FIRST STANDARD
B SECOND STANDARD
C THIRD STANDARD
D FOURTH STANDARD
E FIFTH STANDARD
F SIXTH STANDARD



LONDON SCHOOL-BOARD SCHOOLS, WILMOT STREET, BETHNAL GREEN.



LONDON SCHOOL-BOARD SCHOOLS, WILMOT STREET, BETHNAL GREEN.—MESSRS. JOHN GILES & GOUGH, ARCHITECTS.

NEW BUSINESS PREMISES IN BURY.

A NEW pile of buildings has been erected at the top of Bolton-street by Messrs. Driffield, Brothers, drapers, and which has taken the place of some miserable old buildings which were totally unsuited to the centre of a town like Bury, however valuable as specimens of the architecture in vogue in old times. The site of the new premises is in the very centre, and holding a commanding position at the junction of the main arteries of Bury.

The new premises are built from designs by Messrs. Maxwell & Tuke, architects, Bury, and carried out by local contractors. The new building faces Bolton-street and the Old Market-place. The whole of the ground and cellar floors will be devoted by Messrs. Driffield to their own business purposes; but the three upper floors on the side facing the Old Market-place have been arranged as offices, two of which have been taken by Messrs. Maxwell & Tuke. The remainder of the building is appropriated as the living department for young people engaged in the business. The entrance to the principal shop is in Bolton-street, opposite the end of Silver-street. This is a room 48 ft. by 24 ft., and 14 ft. high, surrounded on three sides by fittings with moulded cornices, perforated frieze, and ornamental brackets. The whole of the woodwork in this shop is to be painted and grained oak and varnished. At the extreme end of the principal shop is the millinery show-room, 28 ft. by 14 ft., the entrance to which is in the centre of the shop, opposite to which will be placed a large plate-glass mirror. To the right of this room is a mantle and shawl room, 38 ft. by 20 ft., the three large windows of which overlook the Old Market-place. The two last-mentioned rooms will be finished in polished and ebonised woods, slightly relieved with gold ornament. The shop and the show and mantle rooms are arranged *en suite*, the return to the shop being through a large doorway about half-way up the right-hand counter. The whole of the cellar under these three large rooms is arranged as a ware-room and show-room for linens and other heavy goods. The approach is from the principal shop, opposite to the shawl-room entrance. Arrangement is made for unloading goods from carts at the back, and passing them down an inclined plane into the ware-room, which has been prepared with a damp-proof floor for their reception. The large back yard at the rear of the residence is gained by a special arrangement. The back part of the shop for a distance of 24 ft. is roofed in with fire-proof brick arching covered with asphalte. This forms an open yard, and allows the whole of the ground-space to be used for business purposes. The exterior of the building is composed of polished Yorkshire stone. The shop-fronts are of cast iron, with enrichments, cast by McFarlane, of Glasgow. The windows are of plate-glass, the upper part from special designs.

THE GLASGOW BARRACKS CONTRACT.

SIR,—A paragraph appeared in the *Builder* of March 8, opening with the following sentence:—"It is known that for some time past the construction of the new barracks at Maryhill, Glasgow, has been suspended, owing to the failure of the contractor to comply with the directions of the War Office, in certain details of the building."

Will you, sir, permit one who has some knowledge of the Glasgow barracks contract to offer a correction. As the word "failure" in the sentence quoted has been discussed during the last fortnight, with a conclusion that it may be interpreted against the contractor, the correction which I wish to make is this. If, instead of "failure," "declined" had been used to express the meaning intended it would have been nearer the mark, but not quite up to it. The real state of the case is something like the following.

As the work proceeded differences arose between the Government officer and the contractor's representative; the latter bitterly complaining of the exacting conduct of the former, and of the annoyance and vexation produced thereby. Like all other disputes in which neither side will recede, this one found its way into a wider and more authoritative field. In order to prevent deep-seated hostility, the contractor, as I have been informed upon very reliable authority, repeatedly suggested arbitration. I am happy to inform you, sir, that the matter has now advanced to that blessed and soothing stage,—a stage upon which many fierce combatants have sheathed their steel, and shaken hands. There are two arbitrators, and a referee; and, from their professional reputation, there can be no doubt whatever but that the rights and wrongs of this long-pending dispute will be awarded the most impartial justice. The contractor is well and widely known in the building trade, and believed, by those who know him, to be the last man in the world who would entertain the thought of either shirking or scamping anything he had in hand. As I have not, and never had, any business relations with him, and as neither he nor any one acquainted with him is aware that I have written this letter, I trust, sir, that you will look upon it as a spontaneous "word," in simple justice to a man with whom Dame Fortune has certainly dealt hardly in the matter of the Glasgow Barracks contract. M.

ARCHITECTURAL COMPETITORS.

THE gentleman who has been appointed to inspect the competition designs for the Chester Workhouse has addressed the following letter to the Clerk to the Guardians:—

"I think it would be well if some notice could be taken by your Board of competitors addressing communications to me on the subject of my examination of the plans. This morning I have a letter from one of the competitors, together with an enclosure, and although it is anonymous, excepting having the motto at foot, nevertheless it is, doubtless, intended to have its influence on any report I may feel it my duty to make to your Board. I think it desirable that this should be mentioned publicly that such letters addressed to me by competitors are very unfair to others, and may have a contrary effect on the minds of the guardians to that contemplated by a competitor.—I am, Sir, yours truly,

WM. CULSHAW."

If architects would obtain fair-play from others, they must exhibit it themselves.

SAINT MARK'S CHURCH, SOUTH SHIELDS, COMPETITION.

THIRTY-TWO competitors sent in designs for this church. Those by Messrs. Clarke & Son, of Nottingham, have been selected, and they have been instructed to carry out the works.

"TO ARCHITECTS."

SIR,—The inclosed * emanates, as I understand, from a successful linendraper in Regent-street. It has been sent to me accompanied by a card of a firm of architects, announcing "sites to let" in Bond-street.

Do let me advise retaliation. Why should not I invite tenders for my wife's spring bonnet, with samples of the "newest French article," to be forwarded to my office? Why should not those "exquisite silks" and choice "French merinos" be sent to me, examined (without any responsibility as regards damage, *of course*), and returned, if not approved,—*of course also* at the expense of the sender?

Is it possible that this wealthy tradesman does not know the cost to any architect submitting plans, that he insults us by his offer? Fancy *ten golden sovereigns* for,—not the *unsuccessful*,—unhappy wretch!—but as the *reward of the best but one*. I can fancy the offer emanating from that immortal firm,—"Brown, Jones, & Robinson,"—but not from any other. That great creation of Trollope, Robinson, must have composed this alluring advertisement:

"NOT FOR JOSEPH."

THE PRINCIPLES AND PURPOSE OF ART.

LORD NAPIER AND ETTRICK, K.T., took the chair on Thursday evening, the 20th inst., at a meeting of the members of the Society for the Encouragement of the Fine Arts, held at their rooms, Conduit-street, when Mr. George F. Teniswood, F.S.A., read a paper on "The Principles and Purpose of Art."

In the course of his remarks the lecturer said, that under the term "fine arts" were comprised poetry, painting, sculpture, and music; but that it was his purpose that evening to draw attention to painting, or the pictorial art. This art embodied the forms and the imagery of external nature; and there was a great distinction, as Mr. Ruskin had pointed out, between the terms "manufactured art" and the "fine arts." Art was not limited to the painting of a picture merely; it had its distinctive character, being an expression of thought by form, and its purpose was to embody the expression or emotion of the mind. Art, therefore, was not only in a great measure the offspring of the imagination, but was addressed to it; and there could be no art where this faculty was wanting. The artist was the interpreter of nature and of humanity, and was the vehicle of thought and sentiment, modified by his feelings and by his intellect. Art represented ideas, and realised truth by imagination; and if a work of art aroused no dormant quickening of that spirit which impels all moving thinking things, put it on one side. Art was the power of seizing the character of truth in whatever garb it presented itself. In the production of a picture, the means employed are those of form, composition, light and shade, and colour. Of these elements of imitation form was the most important, the artist having to define the shape of objects by line. There was no quality so distinctly the mark of a genius as original inventive power, and composition disposed and arranged the matter supplied by invention. Light and shade were of the highest value to the artist, and the power of darkness was the agent of the sublime.

Shadow appeals to the sensitive imagination, and is full of mystery, and many great painters have been strong in the representation of light and shade. Let us, then, not complain of exaggeration in deep-toned pictures. In colour the artist exercised original power and imagination. In conclusion, he said that the love of art may be enjoyed by all. It recognised no priesthood, and its temple was one wherein all could worship. It was a passion increasing, and] an enjoyment within the privilege of all; for the universality of its practice and the antiquity of its existence were well known.

The chairman, in proposing a vote of thanks, after alluding in high terms to the eloquent lecture, said that the pictorial art reconciled us to the humblest objects of life, which, without this art, we should be almost unfamiliar with. The painter was the interpreter of the charms of nature, and his work increased our interest in the subjects. This was especially the case with regard to Dutch landscapes. The same might be observed in the manner in which painters of scenes taken from domestic life represented and idealised the emotions, sorrows, and joys of the poor, thus awakening our interest in such scenes. The power of painting, too, went still further, and awakened in our mind such an appreciation of subjects which we did not derive from the objects themselves, but which, when transferred to the canvas, a more delicate and refined enjoyment was to be derived from contemplating them, this being noteworthy with reference to flowers and leaves.

Major Britten, the president of the society, thought that there was one purpose of art which he regretted the lecturer did not touch upon, and that was the practical purpose of art. Our art workmen and artizans were far behind other countries in technical education, and this was a great pity, in such a great commercial country as ours. He hoped that the Government would be fully alive to this, so that something might be done towards extending art education among our artizans, for this was a purpose of art that well deserved attention.

INFLUENCE OF ARCHÆOLOGY ON ARCHITECTURE.

MR. J. H. CHAMBERLAIN, F.R.I.B.A., gave a lecture recently to the members of the Archæological Section of the Midland Institute, at Birmingham, on "The Influence of the Archæologist upon Revivals of Architecture." The lecturer said that there were two art-revivals which had been brought to pass within the last 500 years, and he proposed to sketch some part of the work that the archæologist had done in promoting them to the best of his ability and in spoiling them to the best of his ability, the latter having been managed by him far more successfully than the former. The two great revivals of past art were those of Italy and England,—that of Italy being known as the Renaissance, and that of England having no particular name except revival of Gothic. Italian revival had lasted somewhere about 500 years, during which time it had done, for good or for evil, a very great deal of work. It had covered the whole of Europe from one end to the other with various buildings, and it had influenced the art of painting and sculpture. In Italy art-revival was essentially a literary revival, and was owing to the discovery of ancient manuscripts and to literature rather than to the buildings which adorned and still adorn Italy. In England it could not be said that the author, the poet, and the "literary man" (to use an ugly phrase) had very much to do with art-revival here. Neither in the case of Italy nor of England was there a complete break between the past and the present in art. In England there had been no time in which Gothic architecture had ceased to be practised, although towards the middle of the fourteenth century the Classic change began, and was at last forced into an original style called Elizabethan. Italian revival had a marvellous influence on the art of the world, which was encumbered with buildings erected according to the rules and laws laid down in Italy 500 years ago, and erroneously supposed to be the laws by which the ancient builders were governed in putting up their temples and buildings. In Italy the chief cause of the revival

* Invitation from the purchaser of site in Bond-street mentioned in our last, p. 234.

of Classic art in the first instance was the man of letters, and the laws, after being discovered, were then moulded and fashioned by the archæologist. In England we might dismiss the man of letters altogether, and the archæologist might lay what claim he pleased to having been the principal cause of the foundation of art-revival here. The archæologist was influenced by the power of admiration, and that had led him to try and adapt what he saw in old work to what he wanted to produce in the present day. In the way of doing this, however, lay the whole difference between the good and the evil effect of the archæologist upon art. The lecturer then gave numerous illustrations in which the archæologist had influenced the architecture and style of public buildings in accordance with his taste, and especially referred to the dome of St. Paul's.

ST. GILES'S CATHEDRAL, EDINBURGH.

THE restoration of the choir of this church, which has been in progress for the last ten months, has been referred to in former numbers of the *Builder*. On Sunday last, the 9th instant, it was opened for public worship, upon which occasion the representatives of various public bodies, attired in their official robes, attended the services. Sermons were preached by the Rev. Principal Tulloch, of St. Andrews, and by Dr. Lindsay Alexander, a distinguished Nonconformist divine,—an instance of that approachment between different sects of Christians which is one of the signs of the times. Both clergymen referred to the subject of art as an aid to religion. "Our taste and our sense of art," said the learned principal, "should be consulted as well as our spiritual intelligence. We are bound to beautify our worship as well as to make it intelligible and earnest. When we allow our worship to be unseemly in any respect; our prayers to be informal, confused, and dogmatic; our praise to be a harsh, discordant noise, instead of a grave, sweet tone of melody; our communion service to be, what it too often is, a series of preachings, rather than a devout contemplation, with solemn thanksgiving and a loud amen,—let us remember that the apostle is not for us, but against us. If a Christian church be not a temple in the old sacrificial sense, neither is it a lecture-room nor a hall for discussion." Such would have been considered bold words to be uttered by a clergyman of the Church of Scotland not so very long ago, and even yet there are some who listen to them with fear and trembling. At a meeting of the restoration committee, one gentleman stated that he was horrified to find that there is a reredos; that the pulpit is placed against a pillar, and not in the centre of the east end, where,—greatest horror of all,—an open space is left, and occupied by a table, which some day may be utilised as an altar.

The restoration is in most respects a very satisfactory one, and bears a greater verisimilitude to cathedral arrangement than the restoration of St. Mungo's, at Glasgow. The stalls in this instance run east and west, and are really stalls, and not open pews, as at Glasgow. They are of solid oak, substantial, and richly carved with heraldic devices, &c. The royal stall is situated at the west end of the choir, and is screened from the entrance by oak panelling. The central canopy has the Royal arms, after the Scottish manner, and unicorns holding the Royal banner.

The reredos is of Caen stone, having panels in which are to be placed bas-reliefs in marble, representing scenes from the life of our Lord, above which are canopied niches, supported on shafts of green marble, which are to contain figures of prophets and apostles. The space in front of the reredos is raised two steps above the general level, and paved with encaustic tiles; upon this platform is placed an oblong oak table and carved oak chairs for the use of the clergy. The pulpit is octagonal in form, resting on four pillars of green serpentine, with foliated caps. At each angle is an angel bearing a scroll, and the panels are richly carved and cusped.

All the passages are laid with encaustic tiles, and appropriate brass standards are introduced for lighting.

Any one inclined to be hypercritical might object to the reredos and pulpit as being too ornate and pretty as compared with the severe and bald character of the interior; but, upon the whole, the restoration is satisfactory as far as it goes. If the whole building were opened up and treated in a similar manner, the result could not fail to be satisfactory; but as it is we have a bit of patchwork which renders the necessity of a complete overhaul of the building more obvious than before.

PROGRESS AT LISKEARD.

New Masonic Hall.—This building, situated on the Parade, next to the Devon and Cornwall Bank, is now nearly completed. The front elevation is ornate. It has been designed by Mr. Paul, of Liskeard, architect, and is built entirely of stone, several varieties and colours being introduced, contrasting with the sombre granite Bank next door. The style has been called French Classic. The plinth is of grey granite, and above, the walling is of local stone, raised in the adjacent parish of St. Clair. The dressings are of Ham-hill. The arch-stones of the windows are relieved by alternate bands of Polyphant, and above and below the moulded and carved cornice, that runs the full length of the building between the ground-floor and the story above, are bands of Polyphant also. The columns to all the windows, as well as those at the entrance, are of red Mansfield stone, and from them spring carved foliated capitals, by which the window-arches are carried. The front room of the lower story will be used as offices. The first floor is reached by a wide staircase. The newels are of oak, carved wheat-ears being largely introduced. The hand-rail is of polished mahogany. The lodge-room is 17 ft. 6 in. by 30 ft. The walls are relieved by a high skirting of varnished deal. The mantelpieces are of Portland stone, and upon their keystones, and in circular panels, are carved various emblems of the craft. Under Brother Paul's personal superintendence the work has been executed, Brother Lang, of the same town, being the builder. The carved stone and wood-work, and the sculpture, have been carried out by Mr. Harry Hems, of Exeter, sculptor.

New Drinking Fountain.—Upon the centre of the Parade, and hard by the granite-obelisk gas-lamp, Mr. M. Loam, twice mayor of Liskeard, has just erected, at a cost of about 200*l.*, a drinking-fountain. The base is 8 ft. 6 in. square upon plan, and is of tooled and moulded Cheese-wring granite, standing upon two steps of the same material. The basins are of polished red Dartmoor granite. The recesses on three sides are of Portland stone, and the water will issue from the open flower of a water-lily, carved in the same material. The upper part of these recesses are groined, the groining springing from a sculptured shell. Above these niches on three sides, and over the door upon the fourth, are pediments supported by carved brackets. The stone principally used is a local material, raised near St. Clair, a neighbouring parish, and this stone is interspersed with bands of Portland and Polyphant. At a height of 11 ft. from the ground is a carved cornice of Portland stone. Above the cornice the structure rapidly tapers off, to the total height of 13 ft. The architect is Mr. H. Rice, of Liskeard, and Mr. Harry Hems has executed the whole of the sculptured work. The structure itself has been built in part by Mr. Sargeant, and in part by Mr. Doney, both builders at Liskeard.

FROM SCOTLAND.

Edinburgh.—The officers of the 93rd Highlanders resolved to devote a small fund to the erection of a fountain on the site of St. Margaret's Well, West Princes-street Gardens. The ruins of the so-called Wellhouse Tower, says the *Scotsman*, stand immedintely under that part of the castle which is known as the Holyrood Rocks, and the building they represent has played a not unimportant part in the fortunes of the castle. The old well in the interior of the tower, which was used by the castle garrison, and was accordingly sometimes poisoned by their besiegers, still furnishes a considerable supply of water. It is to this that the hand of the restorer has been directed, the object being to replace the wooden pump hitherto in use by something more suitable. A large tablet of sandstone has been let into the northern wall of the tower, while immediately in front a fountain has been erected communicating with the ancient well. The fountain, which was designed by Mr. James Drummond, is of polished grey granite, with a pedestal of sandstone, and, including a small ornamental jet, is about 5 ft. in height. The design is somewhat in the form of an urn, surmounted by a Scotch thistle in cast metal, with nozzles for two jets of water, which is supplied by a pump-handle.

Glasgow.—The Commissioners appointed by Government to inquire into the pollution of rivers in Scotland have recommended that steps be taken for the purification of the Kelvin, with all its tributaries; and the Commissioners are about to issue circulars to the different sanitary inspectors whose jurisdiction embraces any part of the river, to carry this into effect. The order of the Commissioners will embrace the interdicting of all paper, print, dye, and bleach works, including all the public works between North Woodside, Glasgow, and Campsie, from polluting the river. It will also become illegal for any portion of the town sewage being discharged into the Kelvin. Action is to be taken immediately for the carrying out of the Commissioners' recommendation.

DISINFECTANTS AND DEODORIZERS.

A PAPER "On Disinfectants and Deodorizers; their Uses and Modes of Application," was recently read before the Portsea Island Society for the Culture of Science and Literature, by Mr. G. H. Stayton, C.E., who is connected with the sanitary authority of the island. Having referred to irrigation (which, he considered, was foremost among the more successful modes of treating sewage), Mr. Stayton mentioned the application of carbon to sewage purification as recently brought before the public by a member of that society, Colonel Synge, and Mr. Stanford, of Glasgow. He believed their mode of treatment was by "intermittent charcoal filtration;" and they claimed for it that the valuable ingredients in sewage were arrested by carbon, were distilled, and more or less of the constituents separately secured, increasing the value of the deodorant. Also, that it perfectly purified sewage water, and reclaimed all the value possible. He had always understood that charcoal was a most powerful deodorant, as long as it was kept dry. From experience, he could say that it ceased to be a purifier of sewer-gases, and was totally useless for that purpose, after it had been thoroughly wetted; and one could only conclude that its use as a sewage deodorant would not give satisfaction, as it could not be relied on to do more than mitigate the evil, inasmuch as a filter of charcoal must very soon get blocked up, if largely used, as must be the case, if used for clearing sewage. The charcoal would then be useless, unless reburned or replaced with fresh, which could not be done without labour and expense being increased. Mr. Stanford stated that sewage purification by charcoal was made independent of existing limited and expensive sources of supply of charcoal, as it was furnished from an original stock, improved in value by means of the refuse dealt with; but if it were refuse, it would involve a dry deodorant carrier, which would do away with the necessity for sewerage works. Of course, that touched on a subject which had caused much disagreement among professional men, as to the "wet" or dry carrier for the removal of town refuse, which, he feared, was too wide for his subject to admit of discussion. Various other processes were briefly referred to, and Mr. Stayton entered into details on the various disinfectants in use,—carbolic acid, chloride of lime, Condy's fluid, sulphurate of iron, sulphurous acid, chlorine gas, &c.

THE COAL QUESTION.

AT a recent meeting of the Manchester Scientific and Mechanical Society, a paper was read on "Fuel, with special reference to peat and artificial fuel," by Mr. A. Hildebrandt. Speaking of coal, the author said the famine was the result of a short supply, brought about by the reckless selfishness of the colliery proprietor and the collier [and he might have classed the coal-merchant along with them]. The prices were not altogether dependent upon demand and supply, but were much more the result of combination among the holders of coal. Nor was there much likelihood of the prices coming down to anything like their original level, because the idleness of the collier suited the coal proprietor, who could now make larger profits upon less extensive transactions. It was rumoured that in some cases the proprietors had refused to bring to bank any surplus of coal which had been got above the ordinary quantity. The Parliamentary inquiry, with Mr. Mundella at

its head, would no doubt produce beneficial results in exposing dishonest practices. A great deal might be done to economise fuel; but if improvements were carried out at all they could not be done all at once. The first substitute which forced itself on the attention of one's mind was peat. Its extent was almost, if not quite, as extensive as that of coal, the area occupied by it in the United Kingdom being estimated at six millions of acres, one-seventh of the area of Ireland alone being peat bogs. The deposits ranged in thickness from 6 in. to 40 ft. The average heating power was somewhat greater than half that of a good quality of coal, but there were peats,—the bottom layers of peat mosses,—which were equal in value to coal. The great obstacle to its general adoption had been its cost, and there was no doubt that with coal at the price it was two years ago peat as a fuel for general purposes could not compete; but with prices more than double what they were then, there could be no question that peat as a substitute for coal for general purposes must be a commercial success. Manchester had the advantage of extensive peat bogs in its vicinity. They were contiguous to the London and North-Western Railway, near Patricroft and Leigh,—the Chat Moss, Irlam Moss, Bedford Moss, Astley Moss, Worsley Moss, Barton Moss, and many others. He strongly advocated a trial of bringing peat into the market, and said he would be glad to render any assistance which he might be enabled to give from his practical experience in the treatment of that material.

A NEW MORTUARY IN ISLINGTON.

AT the meeting of the Islington Vestry held on Tuesday the sanitary committee recommended that mortuary and *post mortem* buildings and waiting-rooms be erected at the chapel-of-ease grounds, in accordance with certain plans which were submitted.

Mr. West, in moving the confirmation of the recommendation, said that the committee had inspected the present mortuary and *post mortem* rooms, and had come to the decision to entirely reconstruct and rearrange the present building.

Some opposition was raised to the recommendation on the ground that the present building only required to be slightly altered; whereupon it was remarked that the present mortuary was little better than a collection of old sheds, and was in a disgracefully broken-down condition, and that as in the new building there would be an inquest-room it would put a stop to inquests being held in public-houses.

The proposal of the committee for the erection of the new buildings was confirmed.

The plans, which have been prepared by Mr. Higgins, the surveyor to the Board, provide for the reception of the bodies of persons dying from infectious diseases, likewise a room for bodies awaiting coroners' inquests, and a *post mortem* room, properly fitted up, where coroners' inquests can be held, and there will likewise be a room for mourners attending funerals.

SCHOOL BOARDS WORK.

London.—The public elementary school in course of erection for the London School Board, situate in Beazley-crescent, Old Ford, Bow, is planned in two distinct blocks; "A" being for the elder boys and girls, "B" for infants. The "B" block is now ready for the roof. Each block has separate entrances and playgrounds. The girls and infants have a play-shed fronting the Old Ford-road; the selected design for the whole being one submitted by Mr. Keith D. Young, which is being carried out under his superintendence, by Messrs. Hill & Sons, of Islington, the amount of contract being 7,548*l.* The schools are designed to accommodate about 1,000 children; the largest school-room being 48 ft. long by 21 ft. wide, which, with the usual class-teachers' and caretakers' rooms, will be warmed by hot air, supplied by the Manchester school-grate, each room having also the advantage of an open fire. The material used for facing is brick. The arches to windows and doors are Gothic, in red bricks, with Bath-stone lintel, the tympana being filled in with Cooper's red ridge-tiles. The conveniences are McFarlane's, and the lavatories are Messrs. Beard & Dent's iron enamelled basins, let into slate tops, with the necessary fittings. The buildings are two stories high, and the basements are built in cement concrete. The clerk of the works is Mr. George Hamlin.—The report of the works committee at the last meeting of the Board, stated that on November 13th the Board accepted the tender of Messrs. L. H. & R. Roberts, amounting to 6,996*l.*, for the erection of schools to be built on the site in Harper-street, New Kent-road. These schools were designed with the front towards Ripley-street, and it is now found that, if this arrangement be carried out, considerable loss of building space will occur, as the district surveyor insists upon the building being placed back from the more advanced line of frontage, which, on this side of the site, is very irregular. The committee have deemed it advisable to obtain fresh plans of the school, with the front towards Harper-street, and an amended estimate has been obtained from the builders for the erection of the schools according to the revised plans. The committee now recommended, and the Board decided, that the revised tender of Messrs. Roberts, amounting to 6,861*l.* (being 135*l.* less than the tender for the erection of the schools as originally designed), be accepted. The committee also stated that they had invited tenders for the erection of a school to provide accommodation for 818 children on the site in Eagle-court, St. John's-lane, Clerkenwell. The following are the respective amounts:—F. & F. J. Wood, 6,667*l.*; E. Conder, 6,050*l.*; Hill & Sons, 6,000*l.*; Dove, Brothers, 5,955*l.*; Scrivener & White, 5,900*l.*; J. H. Tarrant, 5,891*l.*; J. Grover, 5,875*l.*; T. Niblett & Son, 5,762*l.*; J. High, 5,495*l.*; W. Wigmore, 4,825*l.* The committee recommended, and the Board resolved upon, the acceptance of the lowest tender, that of Mr. W. Wigmore, of Bradfield House, Fulham, amounting to 4,825*l.*

Leeds.—Mr. Richard L. Adams, who has been appointed architect of the Leeds School Board, at a salary of 400*l.* a year,—the Board requiring only a portion of his time,—has resided eleven years at Leeds, says the *Yorkshire Post*, where he has practised extensively, especially as a church architect, in partnership with Mr. Kelly. The firm of Adams & Kelly has executed amongst other work, the following:—Christ Church Schools, Upper Armley; Christ Church, Upper Armley; Christ Church Vicarage, Upper Armley (in hand); St. Luke's Church Schools, Beeston Hill; St. Luke's Church, Beeston Hill; school-room, New Leeds; College Schools at Meanwood; Charles-street Schools at Leeds; St. Joseph's Schools, Hunslet; St. Mary's Girls' School, Leeds; St. Mary's Boys' Schools, Leeds (in hand); St. John the Baptist's Church, Newtown; St. John the Baptist's Vicarage; Holy Trinity Church, Armley Hall; Holy Trinity Church Schools (in hand); Leeds Church Institute; Leeds Industrial Dwellings; St. Mary's Church, Batley; Christ Church, Gateshead; St. Matthew's Church, Hull; St. Andrew's Church, Hull (in hand); All Saints' Church Schools, Acton, London; schools at Adel (in hand); schools at Shadwell (in hand); church at Eccup (in hand); restoration of St. Mark's Church, Woodhouse, Leeds.

Bradford.—Mr. Neill moved that the resolution of the 10th of July, 1872, accepting the tender of Messrs. Beanland, for the Whetley-lane School, should be rescinded, and that the tender of Messrs. Wilson & Sons, for 8,300*l.*, should be accepted. He said that Messrs. Beanland had taken this contract, and sent in a tender which the Board proposed accepting. They could not legally and properly accept the tender, and it was postponed for some months. They then sent in a second tender, asking for 400*l.* more, in consequence of the advance in material and wages, and the second tender amounted to 8,300*l.* The committee then thought it was not a proper course to take to give an advance upon any tender, without again appealing to the public. They advertised again, and the result was, they had agreed to take Messrs. Wilson's tender for 8,300*l.* Messrs. Beanland sent in a third tender, which amounted to 8,500*l.* The committee thought that they had got the best tender, and he believed that the work would be well done. Mr. Duggan, in seconding the motion, remarked that Messrs. Beanland were notified of the acceptance of their tender long before they had sent in their second tender. The motion was then carried.

Exeter.—At the last monthly meeting the chairman stated that in answer to the advertisement for plans for schools to be erected on the three sites of the Exe Island, Mary Arches, and St. James's-road; for the first-named, thirty plans were submitted, with estimates ranging from 930*l.* to 2,440*l.*; St. Mary Arches, nineteen plans, with estimates ranging from 1,940*l.* to 3,210*l.*; St. James's-road, twenty-five plans, with estimates ranging from 590*l.* to 1,877*l.* The designs were furnished on the 15th of February, in conformity with the instructions to the architects, one of which was that the "Board are anxious to secure good design, and convenient arrangement, and also to avoid unnecessary expense in ornamentation." The plans were exhibited at the Judges' Room on Northernhay, and after careful and repeated consideration the committee selected from each group three plans, which, with due regard to economy, and the conditions of competition (for in several cases the estimated cost appeared to be altogether insufficient) seemed most likely to furnish the best schools, special attention, in all cases, having been directed to the internal arrangements. They next instructed their surveyor professionally to examine and report on those selected; and finally, after further examination of the plans, in connexion with the careful and exhaustive report of the surveyor, agreed to recommend to the Board for adoption the following plans:—Exe-Island, first, Mr. John Johnson, 25, Moorgate-street, London,—motto, "Well Considered;" second, Messrs. Fletcher & Nightingale, 32, Poultry, London,—motto, "RRR;" St. Mary Arches, first, Mr. J. Toner, Gray's-inn-square,—motto, "1873;" second, Mr. J. Johnson,—motto, "Well Considered;" St. James's-road, first, Mr. John Toner,—motto, "1873;" second, Mr. Robert Walker, King's Arms-yard, Moorgate-street, London,—"Experientia." This selection, though arrived at independently and on their own judgment, the committee were glad to find to have been in accordance with the opinion of their surveyor, subsequently made known to them. The committee recommended that the selected plans (with certain very slight modifications, which have been complied with) be forwarded to the Department for their approval. Mr. Andrew moved that the plans selected should be forwarded to the Department as recommended, and that the best thanks of the Board should be tendered to those gentlemen who had sent in plans, but who had been unsuccessful. They had received plans from no less than thirty-three gentlemen, most of them well designed. Not a single member knew to whom the plans belonged until after they were judged. Mr. Gidley seconded the motion, and added that their resolution would form an excellent answer to the very impudent post-card that had been received by the chairman with reference to the competition. The card ran as follows:—

"Sir,—It is stated in the city that certain gentlemen of the Exeter School Board had fixed on the architect to be appointed and to receive the prizes for proposed schools before the prizes were sent in. If this is correct, is it justice to those who have competed? I would recommend that a disinterested architect be appointed to adjudicate on the merits of each. Surely a School Board who look to the Bible as their guide, and have clergymen in their midst, would not be guilty of dishonesty."

It was referred to the Board in committee to arrange for obtaining plans for the school to be erected in Newtown.

Eccleshall.—The following tenders for the erection of the school at Undercliffe, to accommodate 300 children, were accepted:—Masons' work, Mr. W. C. Murgatroyd; joiners' work, Mr. D. Myers; plumbing, Mr. J. D. Garth; plastering, Mr. J. Firth; slating, Mr. Thomas Nelson; painting, Mr. J. D. Garth; ironmongery, Mr. J. Tennant. In every case the lowest tenders were accepted, amounting in all to 2,725*l.* 11*s.* The total cost, including purchase of site, architect's fees, legal expenses, &c., will amount to 3,244*l.* 3*s.* 6*d.* The clerk was instructed to submit the estimates to the Education Department for approval, and also to apply for a loan of the total amount to cover the cost of erection.

THE SPONTANEOUS IGNITION OF OILED COTTON OR SILK WASTE.

MAJOR MAJENDIE has communicated to the Royal Artillery Institution the results of certain experiments, instituted to ascertain the relative degree of risk accompanying the presence of oiled cotton waste and oiled silk waste in buildings and stores. Mr. Galletly made the investigation. He found that cotton waste soaked in boiled linseed oil and wrung out, if exposed to a temperature of 170 deg., set up oxidation so rapidly as to cause actual combustion in 105 minutes in the case where the action was slowest. A common lucifer match-box full ignited in an hour in a chamber at 166 deg. Fahr. Raw linseed oil ignited less readily. Mr. Galletly considers that the heavy oils from coal and shale tend remarkably to prevent the oxidation described, by protecting the

tissue from contact with the air. It appears that the so-called spontaneous action of oiled cotton waste proceeds from the substance being exposed in a finely-divided condition to the oxidising action of the air. It appears to have been hoped that silk waste might have offered greater security, but this proves not to be the case. It is to be regretted that nothing more encouraging can be drawn from the experiments than the caution not to leave oiled waste about, even in the smallest quantities, especially in warm places. We have before now shown the danger so incurred.

THE TEGETTHOFF MONUMENT COMPETITION.

THE secretary to the Austro-Hungarian Embassy presents his compliments to the editor of the *Builder*, and, in referring to his letter of May, 1872, begs to request him kindly to insert in the *Builder* the following paragraph relating to the award of prizes for designs for the Tegetthoff Monument at Vienna:—

"*Tegetthoff Monument, Vienna.*—The committee formed at Vienna for the erection of a monument to the late Admiral Tegetthoff, have awarded the prizes for the designs presented to them by different artists. The first prize has been awarded to Mr. F. Schlöth, in Rome; the second to Mr. L. Rau, in Berlin; and the third to Mr. Martin P. Otto, in Berlin. The other artists who have sent in designs are requested to apply to the Museum of Art and Industry, Vienna, for having their plans returned to them."

Imperial and Royal Austro-Hungarian Embassy, Belgrave-square, March 24, 1873.

NATIONAL MONUMENTS.

SIR,—The recent wanton destruction of the Constantine Tolmen in Cornwall and the attempted destruction of the Logan stone,—in 1824,—prove the necessity for a Bill similar to that which I hope Sir John Lubbock will cause to be enacted before the separation of this Parliament. Cornwall has even now some notable stone relics which I have seen recently, viz., several circles in the neighbourhood of Penzance, and stone pillars in their vicinity, described by Mr. J. T. Blight in his "Week at the Land's End," and otherwise. Cromlechs at Chûn, Molfre, Zennor, Pendarves, Trevethy (near Liskeard), and one near Lostwithiel; also a kistvaen, near Wadebridge, engraved in Warner's "Cornwall," which I have not seen; two pillars and remains of a circle in this vicinity; the Trippet Stone Circle, near Bodmin; the large Lanyon Cromlech. That at Coit, near St. Columb, has been destroyed recently. The circles, pillar, and remains of three circles, the Hurlers, and Cheesewring Rock near it; a holed stone, in Constantine; and several smaller stone relics, described by local antiquaries, merit preservation.

CHR. COOKE.

THE DRAINAGE OF WINDSOR CASTLE.

THE works for the drainage of Windsor Castle, Frogmore House, and the Crown buildings situated in the Home Park, have been completed, and, according to a correspondent, are now in full operation. The sewage collected from the different systems into one large pipe passes through the Home Park and Manor Farm to the pumping station at Old Windsor, next the navigation cut of the Thames, and close to the new iron and red brick bridge recently thrown over the stream by the Thames Conservancy Board. The pumping-station is a plain brick building, within an enclosure; the receiving-tank and other chambers being on the south of the engine-house. Owing to the immense quantity of water used at Windsor Castle, and which is supplied to the palace by the waterworks near the Windsor Lock, opposite Eton College, the sewage, although separated from the rainfall, is in an extremely liquid state. Passing through an iron grating or strainer, it falls into a well, whence it is easily pumped through the pipe across the bridge to the farm on the Ham. This is easily effected by a four-horse steam-engine, the pumps driven by which are perfectly able to keep under the supply of sewage. There is another engine of similar horse-power, which can be worked by the eight-horse boiler, or compressed air, supplied by a pipe from the Old Windsor Waterworks, which throw the water to Cumberland Lodge and the Indian Engineering College at Cooper's-hill, Englefield-green. The sewage, on leaving the pumping-station, passes over the bridge into pipes concealed within raised tanks, running round and crossing the farm. At the distance of every 22 yards (a chain) there are taps and earthenware pipes sloping from the covered conduits to the level of the field, whence by means of shallow iron troughs, made on movable lengths, the sewage is distributed wherever it is desirable. The irrigation works have been in operation for a month or two, and the ground (rather a heavy soil) repeatedly flooded by the Thames, has now been well saturated with the liquid sewage. About ten acres have been thus prepared, and the plough has been at work turning up the ground. When this is done it will be again drenched with sewage, after which a crop of Italian rye grass will be sown. The process of irrigation is said to be simply and efficaciously performed, and little, if any, smell is perceptible, although the sun was occasionally warm. The works have been carried out by Mr. Menzies, of Windsor Great Park, to dispose of the Castle sewage without passing it into the river, and without creating a nuisance in the district.

THE PROPOSED LAW COURTS.

THE following tenders for building the New Law Courts were opened on Tuesday last, at twelve o'clock, at the office of her Majesty's Commissioners of Works. The sums represent the totals on the tenders from the several builders who had been invited to compete:—

Lovatt	£1,000,000	"odd"
Peto	928,500	0 0
Briggs (Birmingham)	871,242	0 0
Lee	870,870	0 0
Brass	866,863	0 0
Browne & Robinson	861,930	0 0
Holland	861,243	0 0
Trollope	859,313	0 0
Dove	852,200	0 0
Cockburn (Dublin)	846,790	0 0
Higgs	822,500	0 0
Lucas	813,636	0 0
Baker	780,690	0 0
Jackson & Shaw	759,878	0 0
Perry	759,000	0 0
Kirk (Woolwich)	754,000	0 0
Bull (Southampton)	719,787	0 0

THE BUILDING TRADE IN LONDON.

THE carpenters and joiners have applied to the Association of Master Builders of London for an increase from 8½d. to 9d. an hour. The following reply has been returned:—

"Sir,—I beg to enclose a copy of resolution passed by the committee of the Central Association of Master Builders of London.—I am, Sir, yours faithfully,

pro STANLEY G. BIRD, Hon. Sec.,
C. H. G.

Mr. C. Matkin, Secretary,
Carpenters' and Joiners' Committee, London.

Copy of Resolution.

'The committee of the Central Association of Master Builders of London has received with surprise a request from the carpenters to disturb the arrangement made so recently as to rates of wages and hours of work. In regard to the alleged present necessity of an increase of weekly earnings, the committee is of opinion that it should be met by working longer hours during the summer months,—an arrangement the committee is prepared to consider.'"

PATENT AND MODERN INVENTIONS.

SIR,—In your last week's number you describe a patent invention by Messrs. Truswell & Co., of Sheffield, for heating buildings by means of pipes fastened into a frame plate at either end, and built into a furnace, the pipes being heated by the furnace, and the air passing through the pipes. This *modern* invention is certainly thirty years old, and probably much more. It was used in a London church, to my knowledge, very many years ago; and, as far as I can remember, it answered to a certain extent. The apparatus (identical with that you mention) is described in Mr. Hood's "Practical Treatise on Warming Buildings," fourth edition, p. 212, published in 1869; and this is only another instance how frequently it happens that old inventions are patented as new discoveries, which, in fact, have been known and used for many years.

A CONSTANT READER.

INSTRUCTED PAINTERS.

SIR,—I notice in the *Builder* of this week, March 22nd, that the Worshipful Company of Painters are to offer prizes for decoration, &c. The exhibitors, or candidates, are not aware of the injury they will do to their own interests, if it becomes known in painters' shops in London, and among the foremen thereof. Of course it is presumed that all the exhibitors are house-painters, accustomed to distemper ceilings, paint kitchens, bedrooms, or drawing-rooms, as the case may be. As I have said, if it becomes known, they will not get a job at house-painting. This may seem extraordinary, but it is nevertheless true, which I can prove in my own case, and in that of an acquaintance of mine, who is a good workman in all that relates to the minor departments of house-painting, let alone decorations and ornament of all kinds, and who exhibited some patterns in the Painters' Hall some years since. He is very well known in the trade as a skilled workman, and they will not employ him; he is willing to do the commonest work,—in fact, anything that comes. I will not say much of my own case; only, because I am supposed to be a little skilled also, it has kept me out of work for some time. I am not so well known as the party I have mentioned, else it would be all the worse for me.

Where will be the benefit of Mr. Crace's lectures on drawing and decorations? As you will see by what I have said, when a man spends some years in the study and practice of decoration, and asks for work, he is told there is nothing fine enough for him, though at the same time he only wants to work as an ordinary house-painter. There is so little done in decorations, that men would starve if they were to wait till such work had to be done.

A PAINTER.

ELECTIONS UNDER THE SANITARY ACT.

LOUTH, LINCOLNSHIRE.

THE joint committee, consisting of twelve guardians and twelve members of the town council, representing the Urban and Rural Sanitary Authorities of Louth, met on Monday, the 17th inst., to elect a medical officer of health for the whole union, which comprises 90 parishes, with an area of 147,292 acres; the population is 34,760, and the number of houses 8,129. There were thirty-seven candidates, but the voting was confined to two of these, viz., Mr. T. W. Bogg, Louth; and Dr. Domenichetti, Penge. The latter gentleman, who had very high testimonials, was elected by fourteen out of the twenty present. The salary is 500*l.* per annum, 375*l.* being paid by the Rural, and 125*l.* by the Urban Sanitary Authority.

The appointment (for five years) of Dr. Domenichetti was confirmed by the town council at an evening meeting; the Doctor being also appointed the public analyst. The council also proceeded to the election of an inspector of nuisances. There were ten candidates to select from, but Mr. H. Marsden, surveyor, and Mr. T. W. Wallis, surveyor, both residents of Louth, were the only names voted for. Mr. Wallis was appointed, receiving eleven votes, and Mr. Marsden nine votes. The salary is 100*l.* per annum, but the officer appointed (for two years) is not required to give his whole time to the performance of his duties. The area of Louth is 2,560 acres, the population is 10,500, and the number of houses 2,713.

On Wednesday the committee of Board of Guardians met to appoint an inspector of nuisances for the whole union (excepting Louth). There were thirty-three candidates for this office; the salary, 250*l.* per annum, to include travelling expenses, and the officer must devote his whole time to his duty. The long list was reduced to five names, the final selection being postponed to the Wednesday following. This appointment will be for two years.

It is much to be regretted that political feeling should be allowed to prevail in elections such as these, but this is unfortunately the case.

THE TRADES MOVEMENT.

Liverpool.—A largely-attended meeting of master painters has been held at the rooms of the Builders' Association, Mr. Gardner in the chair. The meeting was called to further consider the demand of the operative painters to reduce their hours of labour from 56 to 54 per week, and to increase their wages from 6½d. to 7½d. per hour. The committee appointed to meet a deputation from the men reported having offered them a reduction in hours of labour to 55 per week (as worked by the other branches of the building trade), and an increase of ½d. per hour in wages, which they declined, agreeing to forego the time question, but to adhere to their demand for 1d. per hour to their wages. After fully discussing the question, it was unanimously resolved,—"That the offer of the committee, viz., 55 hours per week, and an advance of ½d. per hour, be confirmed and adhered to."

Leeds.—At a meeting of the engineering trade,

numerously attended, a resolution was passed, asking that "time and quarter" should be paid for the first two hours worked as overtime, and "time and half" for each additional hour; double time for Christmas-day and Sundays, each day to stand by itself in the computation of either day-time or overtime. The workmen present pledged themselves to work no more overtime after the date (March 15th), except under the conditions above specified. Some fifty of the large mechanical employers in Leeds have already had a meeting on the subject, and have resolved that the demand cannot be conceded, and have passed a resolution that they will not pay for overtime at an extra rate until a full week of 54 hours has been worked.

Aberdeen.—The painters are moving for an advance of wages.——The operative joiners have demanded an advance on their wages of 2s. 6d. per week, to take effect at 1st April next. The masters have offered 2s., to commence on 20th June next. This the men have declined, and there is every probability of a strike.

Alloa.—The operative joiners have addressed a circular to the masters, soliciting an advance of 1d. per hour on their wages, to take effect in June.

Arbroath.—At a large meeting of operative joiners, it was agreed to request the employers for an advance of ½d. per hour on the present rate of wages.

Burntisland.—The joiners employed in the locomotive workshops on the North British Railway at Burntisland have applied to their overseer for an advance of wages. The avervge wage amounts to 23s. per week of 51 hours.

Clippens.—The fitters, joiners, and blacksmiths employed by the Clippens Shale Oil Company, who struck work in consequence of having received notice of an increase of their weekly working hours from 54 to 57, have accepted their employers' terms, and are now working the increased hours.

Ayr.—The dispute between the operative joiners who struck work, and their employers, seems to be no nearer a close. The operatives demand an advance of ½d. per hour, and a reduction of the hours from 54 to 51 per week. At a meeting of the masters, held on Friday week, it was agreed to withdraw their offer of ½d. advance, and offer only ½d., without any reduction of the hours.

FLOWERS FOR THE POOR.

SIR,—One of the kindliest efforts towards the amelioration of the surroundings of a number of poor people in their homes, is now taking place in the dirty and densely-populated neighbourhood of Greengate, Salford. The movement has been begun by a number of benevolent gentlemen, and led by Mr. Lee Grindon and Mr. John Edwards. Mr. Grindon is very well known as an eminent botanist, whose writings descriptive of the flora and their habitat found in the vicinity of Manchester have given a great stimulus to botanical study, and added largely to the interest felt in our country rambles.

About the close of the past year these gentlemen invited the poor people, by handbill, to come and receive gratis a potted hyacinth bulb, which they had to promise to tend, and with the understanding that when the flowers were in bloom there would be an exhibition. Many hundreds were distributed in this manner; and as the plants are now at their best, a show was held on Saturday afternoon last, in the Richmond Lecture Hall, when not less than 250 plants were brought up by their respective owners,—250 individuals, for nobody got more than one pot,—and the plants were very creditable indeed to their growers. Most of them had evidently been well cared for. The public were admitted to view on payment of 2d. each, and prizes of well-established hydrangeas, vallotas, &c., were kindly given as rewards for the best flowers by Mr. R. S. Yates, and every exhibitor received a small parcel of flower-seeds suitable for the hyacinth-pot, when that flower should have done blooming, with instructions how to sow it, &c. Many of the recipients, doubtless, never had anything like these in their hands before, unless it might be the roe of a high-dried herring, and they would be perfectly ignorant of what to do with them. As fresh mould would be required for the pot at planting, and such a thing is unknown in Greengate, a gentleman residing in Lower Broughton has kindly offered to supply all that is needed from his own garden. By-and-by there will be an exhibition of these flowers, and so the movement will grow.

I take it, sir, that this is one of the kindliest of the many kind efforts of the present day, most humanising in its effect, and redounding to the honour of its promoters, whom, as an outsider, I beg leave to thank most heartily, and to commend the movement to other workers in other places. E. G.

SCHOOLS OF ART.

Lambeth.—A largely-attended gathering of students and ex-students of this school and their friends took place at the school, Miller-lane, Upper Kennington-lane, for the purpose of presenting Mr. Edwin Bale, who has held the post of assistant-master for the last ten years, with a testimonial. The testimonial, as described by the *South London Chronicle*, consisted of a handsome richly-engraved silver claret-jug and salver, and also of two claret-jugs in sgraffito ware designed by Miss Barlow and her brother, students in the school.

Cambridge.—The annual exhibition of this school has been held at the Institution. The customary meeting in connexion with it took place in the assembly-room of the Guildhall, the chair being occupied by the Rev. Professor Lightfoot, who was accompanied on the platform by Mr. A. J. B. Beresford Hope, M.P., Mr. Sidney Colvin, the new Slade Professor of Fine Arts, the mayor, and others. There was a large attendance of pupils and their friends.

The hon. secretary read the report, in which it was said:—

"The school has now completed its fourteenth year, and the committee can speak with satisfaction of the attendance of the students, the numbers having been fully kept up.

The committee, however, think it their duty to state that the Government inspector in his report has called attention to the want of minute care and earnestness of purpose in the delineation of objects, and to the lack of desire to imitate closely general outline. These remarks apply principally to the groups of still life. The students have not this year succeeded in obtaining any of the higher or national Government prizes as was done last year; but this distinction is so special that the failure is no cause for discouragement."

The Government had awarded various ordinary prizes for work done during the year.

The Chairman said, an unexpected, but a pleasing duty now fell to his lot, in presenting to their master, Mr. Wood, a testimonial of the affection and the esteem which the students felt for that gentleman. Judging by his own sentiments, he did not think there were any higher tokens of appreciation than these. He was quite sure the appreciation of his pupils would go further to his heart than the treatment of the Government officials. It would, no doubt, be an incentive to future exertions.

Mr. Wood, who was warmly received, said he was extremely obliged to them. The awards of the Government Inspectors were not to be challenged, but he, nevertheless, did challenge them. He wanted the students to look more to Nature, and to infuse a little more life into their labours. It was true they were painstaking; but he wished them to stand higher (not with the South Kensington Department, but) with the public.

Frome.—The prizes and certificates won by pupils of this school in the annual examination in connexion with the Science and Art Department, South Kensington, in April, 1872, were presented at the rooms of the school, by the Rev. J. S. H. Horner, president. Owing, doubtless, to the unfavourable state of the weather, the attendance of pupils and visitors was small. The president said, they had now arrived at the eighth year of the school's history. During the year 1872, there were 297 works sent to London executed by their pupils. That was not quite so many as in the previous year, but it did not follow that the school was not doing as good a work, or that the pupils were less earnest and energetic. Such a school as theirs was certain to experience many vicissitudes and ups and downs. Of the 297 works, 286 were for elementary drawing, and 11 in the advanced section. In a town like Frome it was peculiarly their work to advance elementary drawing.

The Sub-Wealden Exploration.—Quite unexpectedly, at a depth of 131 ft., a stratified mass of pure white crystalline gypsum (statuary alabaster) has been reached. No such accumulation of gypsum was ever met with in Sussex before. Gypsum being a material which is commercially valuable, the landowners are seriously considering the question of working it.

CHURCH-BUILDING NEWS.

Longton.—Dresden Church, built from plans by Sir G. G. Scott, in 1853, and enlarged according to a provision in the original plans, in 1863, has again been enlarged, to meet the needs of this large and increasing suburb of Longton. The accommodation was originally 272, it was increased to 452 in 1863, and it has now been further increased to 670. This last increase has been made by lengthening the entire fabric westwards. A porch has been added, and many internal improvements made. The floor of the entire building has been boarded, and the centre aisle paved with Minton's encaustic tiles. The seats have been cleaned and re-varnished, and new kneelers provided. The organ has been improved, and a new bourdon stop added, by Messrs. Bellamy & Stringer, of Hanley. The total cost of enlargement and improvement will amount to about 1,000*l.* The architect employed was Mr. Lynam, of Stoke, and the builders, Messrs. Inskip, of Longton.

Murston.—The tender of Messrs. Adcock & Rees, of Dover, for rebuilding the church on a new site, according to plans prepared by Mr. W. Burges, has been accepted by the committee. The amount required is nearly 3,000*l.*, of which about two-thirds have been subscribed or promised. The new church is intended to be built in a more central position, so that the inhabitants of the eastern parts of Sittingbourne will be benefited as much as those of the actual parish of Murston.

Saffron Walden.—A meeting has been held in the Town-hall to consider the report of the architect, Mr. C. Butterfield, who had been consulted as to the state of St. Mary's Church, and the probable cost of its restoration. It was also an object of the meeting to open a subscription-list. The Rev. T. C. Beasley, vicar, presided. He said he had written to Mr. Butterfield as to the cost, and he had replied that the sum of 6,000*l.* would be the entire cost of the restoration of the fabric and the church. The report of the architect called special attention to the deplorable state of the north windows and the roofs, and proposed that these should be restored at once. It was proposed to extend the work over three years. The vicar further announced that Lord Braybrooke had authorised him to state that he would give 600*l.* towards the restoration fund, in addition to restoring the entire chancel at his own cost. He estimated that the cost of the latter would amount to about 800*l.* A subscription-list was then opened, with a total of 1,084*l.*

Broadclyst.—The chief stones of a chapel and school have been laid at Westwood. The buildings themselves will cost about 1,500*l.*, but that does not include site or surroundings. The architect is Mr. Edward Ashworth, of Exeter; and the builders are Messrs. Diggins & Smith, also of Exeter; the Bath stone dressings are supplied by Messrs. Mitchell & Son, of the Haven Bank Works; and the carving is being done by Mr. Harry Hems, of Exeter. The building is Early Decorated Gothic. The walls are being constructed of Killerton stone, with Bath stone dressings. This Killerton stone is dark-coloured, honey-combed, of volcanic origin, rather soft when taken from its ancient oven, but which hardens to great power of endurance when exposed. The nave is 39½ ft. in length, by 21½ ft. In the north transept is the vestry, 9 ft. by 7½ ft. The chancel is 21½ ft. in length, by 14 ft. in breadth. The seats will be open, according to the fashion of the times, and calculated to accommodate 110 persons. A Corsham stone pulpit will be the rostrum for the preacher, and there will be a font of the same material. The chapel is to be lighted by six windows in the nave, filled with cathedral diamond glass,—three windows will give light to the chancel. There will be an entrance-porch, 8 ft. by 7 ft. The roof, as a matter of course, will be open, with carved braces, and moulded wall-plates. The chancel roof will have trussed rafters and collars, with carved ball-flowers in the hollows, lined with V-jointed boarding. The chancel-arch will spring from carved corbels, the work of Mr. Hems. The floor of the chancel will be laid with black and red Minton tiles, the sacrium and footpace with encaustic tiles to a design,—the nave and porch with Langport stone paving. The roof will be covered with county slating to vary in colours. The bell-turret is to have a Warner's bell of 2 cwt., with wrought-iron cross and moulded base upon the apex. The school premises are a few yards further up the field. The schoolroom is 27 ft. by 18 ft., with a mis-

tress's dwelling and all necessary offices. It is to be a "dame school." It is in a style consonant with that of the chapel, the materials of construction the same. The walls are to be lined with brick, in lieu of plastering. The school is to accommodate about sixty children. The walls, at points, are now several feet above the ground.

Books Received.

Remarks on the Land Transfer Question, with a Sketch of a Plan for a General Register. By F. H. COLT, of the Inner Temple, Barrister-at-law. London: Sweet. 1873.

THE cost, the uncertainty, and the delay attendant on the purchase and transfer of land, often form serious obstacles to those who would possess it, especially in small quantity.

Mr. Colt has brought before the public (under the sanction of a permitted dedication to the Lord Chancellor), a proposal which seems to us to be at once simple and effective. He allows Time to come to the aid of legislation in a manner which is both easy and effective. He proposes that every transfer of land, after the passing of the suggested Act, should be compulsorily registered, such register giving to the transferee a perfect title as against the transferror. In case of demise or of bankruptcy, the transfer by will, by legal heirship, or by operation of law, is to be thus registered, as well as in the case of sale and conveyance, no charge upon land, except a first mortgage, to be put on the register. The operation of this plan would, within the lifetime of a couple of generations, establish a perfect legal title to all the landed estates of the country that would be at once indefeasible, easy of access, and readily available to purchasers. It would do this at a minimum cost, and with a minimum degree of interference with existing interests. The remarks to which we refer are reprinted, with additions from the columns of the *Law Journal*, of which, we believe, Mr. Colt is one of the editors.

The Year-Book of Facts in Science and Art. By JOHN TIMBS. London: Lockwood & Co. 1873.

ONCE more Mr. Timbs embalms for the popular eye the most recondite fruits of the year's progress in science and art amongst the adepts, much of which might otherwise not be seen or heard of for years, if at all, by the public. And yet Mr. Timbs is not seldom taken to task by hypercritics because he is not the author, but only the editor, as a rule, of some of his most useful books. But of what worth, compared with this volume, would such a book be, even were it *written* by the hypercritic himself? It is the *ipsissima verba* of men of science and of arts which constitute its value.

The present volume has a portrait of Dr. W. B. Carpenter, the president of the British Association in 1872, and a *vignette* of the central rotunda of the Vienna Exhibition, with a reference to p. 27, on which is our own account of the rotunda, duly acknowledged. The interest of the volume is as varied and great as it has been any year during the last quarter of a century, or at least since the origin of this standard work.

VARIORUM.

"THE Illustrated Guide and Directory of Manufactures," edited by R. S. Barker (75, Fleet-street), has reached a third edition, and has been enlarged. The object of the work is "to show the buyer at a glance the names and addresses of the leading manufacturers engaged in any particular trade in all parts of the kingdom." We are disposed to think that many names might yet be added, still the book goes a long way towards doing what it professes to do. ——"The Export Merchant Shippers of London," 1873 (Dean & Son), is another directory that will be found useful by many of our readers. The shippers are arranged alphabetically, and there is an index to places of shipment also.—— "Vacher's Parliamentary Companion" has been published for March, and contains its usual large amount of necessary information.——The second edition of "How to Make a House Healthy and Comfortable," by H. J. Lanchester (Simpkin, Marshall, & Co.), contains some additional matter, and will serve to make popular advice often given before, but which cannot be too often repeated.——"Steam in the Engine: its Heat and its Work. By P. Kauffer, Managing Engineer, Leeds. London: Blackie & Son." In this volume the author has compared his own practical experience with the data from Joule's and Regnault's experiments; and gives the conclusions to which repeated trials and observations have led him.——"Cracroft's Investment Tracts: American Railways as Investments. By Robert Giffen. London: Stanford." Information is here given as to the average profits of American railways, the conditions and distribution of profit, the land grants, the legal position of American railways, &c. On page 28 the author gives some incredible-looking figures as to the wealth and population of the United States, by decades from 1790 to 1860. According to the table in question, the value of real and personal property in the States has mounted up from 750,000,000 dollars in 1790 to 30,069,000,000 dollars in 1870, which, even making the largest possible allowance for depreciation of dollars between 1860 and 1870, is a tremendous leap, even over 16,159,000,000 dollars in 1860. Yet, as the author remarks, if wealth increases in England twice as fast as the population, the rate of increase in the States between 1840 and 1850 (3,764,000,000 dollars to 7,135,000,000 dollars) should at least be credible, as it is in little more than the same ratio; and many reasons, he adds, could be urged for believing in the higher rate between 1850 and 1860. The average property to each person is stated to have been 187 dollars in 1790 and 776 in 1870.——"Second Annual Report of the Board of Commissioners of the Department of Public Parks for the year ending May 1, 1872. New York: Bryant & Co." The detailed nature of this report may be seen from the fact that it consists of about 250 pages of imperial octavo size. On the subject of concrete pavements, the Report says:—

"This department has laid, chiefly in the year 1871, a large extent of concrete pavement. Various patent compositions and processes have been employed for this purpose, all of which were expected to be improvements upon the ordinary stone and gravel roads and walks previously used. On inspection, at the close of the last winter, the condition of but a very small part of all these pavements was found to be satisfactory. The surface of the walks which had been laid more than one year was disintegrated in whole or in frequent patches, and it was evident that an extensive reconstruction, or large repair, was immediately necessary.

A number of gentlemen connected with the public works of Philadelphia, Washington, and Brooklyn were invited by the Department to make an examination and study of the subject, and a report of certain conclusions reached by them has been made public. It was ascertained that over one hundred patents for bituminous concretes, especially designed for the surface of walks and roads, had been issued from the United States Patent Office, the specifications of most of which provide for an admixture of substances, the only effect of which would be detrimental to the purpose in view. The reason of the failure of others is found either in the fact that the bituminous substance used contains different and unknown proportions of accidental impurities,—some positively harmful, and some simply useless,—or in the fact that greater judgment and skill is in some parts exercised by the workmen engaged in the manipulation of the combination than in others. The practicability of obtaining here a concrete pavement similar in character to those which have been found for years past so satisfactory in Paris is not doubted, but as yet no method by which an equally valuable result can be accomplished, except at a cost which would forbid its general application, has been completely established."

Miscellanea.

Steam-Boiler Inspection. — The Twenty-second half-yearly report of the Midland Steam-Boiler Inspection and Assurance Company, at Stourbridge, has been issued in a printed form. It states that there were 3,285 boilers under the care of the Company, and this number has since increased. There have been two slight and one serious explosion among the assured boilers during the past half-year, but without injury to any one. There was no explosion among the boilers under the Company in the first half of the year 1872. During the past year there were made 13,626 examinations of boilers, of which 1,697 have been seen inside, and 1,808 in the flues. Of the 3,285 boilers under the Company, 1,155 were used at collieries or mines, 1,502 at ironworks, and 628 at mills of various kinds. The boilers may be described in general terms as 2,514 fired externally, and 771 fired internally. The detection of internal or external corrosion has been frequent. The causes of explosion have been, as heretofore, about equally divided between faults of construction, want of proper inspection, and inattention of attendants; but there has been an unusual number of casualties to steam pipes and fittings. In a recent case of explosion, we may remark, careless attendants had first lighted the fire, and then filled the boiler!

Utilisation of Slag.—Mr. Woodward, of Darlington, has patented a plan for manufacturing bricks from scoriæ, and the system is now at work at the Eston Works of Mr. Thomas Vaughan. The slag is taken as it comes from the blast-furnace. It runs into a series of moulds, placed at regular intervals on a revolving table. After being removed from the moulds the bricks are thrown into a kiln or furnace close at hand, where they are annealed; and afterwards they are used in any ordinary structure for which clay bricks are suitable. The fracture is said to be close and firm, and they are capable of resisting an intense heat. So far as strength is concerned, they will withstand a crushing force of 3 to 4 tons per cubic inch, or four or five times more than that of common bricks. The scoriæ brick remains unaffected by exposure to the atmosphere, it is said, but this does not accord with what has been said of slag used for roads which is said to contain sulphur, and to be liable to disintegration. This should be disproved, if possible, of the bricks. There is a considerable loss by breakage, but once solidified they are as hard as granite. It is calculated they can be made for 8s. per 1,000, or even less, whereas ordinary bricks cost 20s. and upwards per 1,000. A new company has been formed, on the limited liability principle, to work Mr. Woodward's patent, and they have acquired the right to the slag of all the blast-furnaces on the Tees, including those both above and below Middlesbrough.

A New (?) Patent Grate.—A patent has been taken out by Messrs. Carrington & Platt for a fire-grate of simple construction, designed to prevent the formation of smoke, and to cause more perfect and regular combustion of coal. It consists of an ordinary fire-grate, with bars in front, and a back and sides of fire-clay, the whole of which is pivoted in a suitable frame on two supports. By a small handle this grate can be rotated on these points. Small grids are placed at the top and bottom. The fire is lighted in the ordinary manner, and when it has burnt clear, the upper grate is removed, and fresh fuel placed on, as in ordinary grates; the movable grid is then replaced, and the grate is turned round, with the fresh fuel at the bottom. Thus the fuel burns gradually downwards, and the production of smoke is almost, if not entirely, prevented. The advantages of the invention are said to be great economy of fuel, prevention of smoke, and perfect combustion, as well as a steady, continuous fire, requiring little use of a poker, and saving more than 20 per cent. of fuel. The rotating grate is an old invention, as past pages of the *Builder* will show; but it may be none the worse for that, only it does not seem to have yet come into general use.

Technological Examinations.—The programme for 1873 of the Society of Arts has appeared in print. It states that at the conference held at the house of the Society on the 20th July, 1872, Prince Arthur in the chair, the council's scheme of technical examinations, as proposed by Captain Donnelly, R.E., a member of their body, having been cordially approved of, the council have decided to hold annually, in conjunction with the examinations of the Science and Art Department, examinations in the technology of some of the arts and manufactures of the country. Due notice will be given of the several industries in which examinations will be held. The examination will be by a special examination-paper, to be worked in conjunction with these examinations. The practical skill will be judged by the returns of the candidates' employment, for some years past, in the particular art or manufacture. The programme of examinations for each industry is given. The subjects for the year 1873 are Cotton, Paper, Silk, Steel, and Carriage-Building. Announcements will be made from time to time of any additional prizes that may be offered in each subject.

The Amalgamated Society of Engineers. At the Newcastle-on-Tyne County Court on Wednesday a member of the Amalgamated Society of Engineers made a claim on the funds for a weekly allowance under the rules. For the defence it was stated, according to reports, that the rules of the society were not registered, and this plea was held to be fatal to the claim. There must surely be some error in this account. If not, it is time the members took advice as to their position. The society is stated to number 40,000 members, with funds to the amount of 250,000*l*.

"Removal" of Northumberland House.—It is proposed to remove the house bodily, in the American style, on a balk timber framework, inserted transversely and longitudinally below the basement of the house, and by the application of a series of powerful screw-jacks lifting the superincumbent mass, moving it along a prepared tramway, and then veering it around to square with the approach from Pall-mall!

Proposed Widening of Charing-cross.—At the last meeting of the Metropolitan Board of Works, the Parliamentary Committee reported that they had further considered the Admiralty and War Office Re-building Bill, by which it is proposed to pull down the buildings on the west side of Charing-cross from Drummond's Bank to the Horse Guards, extending westward to the depth of nearly 500 ft., and on that site to re-build public offices. It had occurred to the committee that this would be a favourable opportunity for widening the thoroughfare at Charing-cross, and they recommended that they be authorised to confer with the First Commissioner of Her Majesty's Works, &c., as to whether an arrangement can be made for widening the thoroughfare at Charing-cross, in connexion with the Admiralty and War Office Re-building Bill. The Bill has since been withdrawn.

Who Orders must Pay.—At the Sussex Lent Assizes, before Mr. Justice Brett, the case of Macfarlane & Co. *v.* Dr. J. F. Money was tried. Dr. Money, of Brighton, employed a builder, Mr. Kemp, under an architect, Mr. Hill, to erect four houses for him, under a contract with the builder. Messrs. Macfarlane & Co., of London and Glasgow, supplied iron-work; and respecting a balcony Dr. Money was consulted. The question at issue will appear from the judge's summing up. His lordship said the question was not whether plaintiffs had given credit to defendant, but whether there ever was a contract between the parties by which defendant agreed to pay plaintiffs for the goods supplied for building the houses. The invoices were not sent in till some time after the goods had been delivered, nor until Mitchell had ascertained that Kemp was in difficulties. It was for the jury to say whether the fact of the invoices being sent in to Dr. Money after Kemp had failed did not show that plaintiffs were looking out for some one to pay them for their goods. The jury immediately returned a verdict for the defendant.

Weather Reports and Charts.—A specimen report and chart of the weather in the British Isles and their vicinity, prepared by Mr. G. A. Rowell, has been lithographed by Whiteman & Bass, of 236, Holborn, London. As Mr. Rowell remarks, "The value of maps showing by signs the simultaneous meteorological conditions over a vast extent is now fully proved by the tri-daily issue of weather charts by the American Government, giving at a glance (on a map 22 in. by 14 in.) the state of the weather, at intervals of eight hours, over the whole of the United States. These charts must be extremely valuable to the agriculturist, in giving a warning of the approaching storm or a change to wet or dry weather; and so also to those engaged in maritime affairs. They have also already led to a knowledge of important facts as regards the course and cause of storms. The plan of the annexed map is suggested as a ready means for giving the information to which it relates; it is similar to one I submitted to the Ashmolean Society in 1848."

Accidents.—About 100 ft. of the Drogheda Quay-wall has fallen into the River Boyne, carrying with it a corresponding length of adjoining street about 12 ft. broad. The accident was caused by tidal action undermining the wall. ——A gas explosion in the High-street, Lincoln, has blown out the new front of a shop put in a week before, and strewed the High-street opposite with a *débris* of looking-glass, teapots, and other wares. Gas having escaped through the night, the too usual course of seeking for the source of the escape with a naked light and not with the nose was adopted, and with the usual result.

Clerk of Works to Paddington Vestry.—At a recent meeting of the vestry, the Highways Committee submitted the names of three candidates, viz., Mr. John Conway, Mr. George Lewis, and Mr. John I. Oram, as most eligible for the office of clerk of works. On a ballot being taken, Mr. John Conway was elected, at a salary of 140*l.* per annum.

Costly Water Fittings.—The vestries and district Boards of the metropolis are protesting almost with one accord against the preposterous regulations which the water companies have made, and the Board of Trade have approved, in pursuance of the Act passed last session for ensuring a constant water supply, and the Metropolitan Board has expressed its determination to resist as far as possible the enforcement of the regulations. It is declared that the cost involved is equal in many cases to the rent of the house for two years, and involves a cost over the house-owners of London of 11 millions sterling! The Metropolitan Board have ascertained that the expense of providing the fittings required will amount to more than 10*l.* for a small cottage, and to 60*l.* and upwards for each of the large houses in the West-end of London, and they are in hopes of inducing the Government to appoint a Commission on a subject which interests every householder in the metropolis.

Extension of the London Hospital.—A public meeting has been held in the Egyptian Hall of the Mansion House, for the purpose of aiding the managers of the London Hospital, Whitechapel-road, in raising a sum of 100,000*l.*, which is required for the purpose of providing additional accommodation, and meeting in other respects the growing demands upon the hospital. The Lord Mayor presided, and among those on the platform were the Duke of Cambridge, president of the hospital, and other influential gentlemen. The present expenditure of the hospital is said to be 20,000*l.* a year in excess of its fixed income. The secretary, at the close of the meeting, read a list of the sums already subscribed to the fund, amounting to 37,000*l.* It was stated, that of the 100,000*l.* now asked for, about 25,000*l.* would be expended in erecting the additional accommodation that was required and the remainder would be devoted to the maintenance of the hospital.

Crane-testing.—In a case decided at the Devon Lent Assizes,—Kerslake *v.* The Exeter Corporation,—the plaintiff had supplied a crane for defendants, and the chief point turned on the testing of the crane. The judge said there was not a tittle of evidence of adoption by the corporation. The crane was not tested to their satisfaction, and in ordering it to be removed they only did what they were bound to do. A crane was a very dangerous thing, and if life was lost by the poor workmen who were bound to work under it, it would be a case of cruel manslaughter on the part of those who compelled the men to work with it. The corporation were quite right in acting in the spirit they did. The jurymen did not seem to understand the case, and his lordship had to further explain it to them. They then found their verdict for the defendants.

Steel from the Ore with little Coal.—An important lecture has been delivered to a crowded audience of the fellows of the Chemical Society, at Burlington House, by Dr. C. William Siemens, F.R.S., "On the Manufacture of Wrought Iron and Cast Steel direct from Iron Ore by a new Method." By this process the blast-furnaces, as well as the laborious puddling operations, are suppressed, the ore being simply deoxidised, and the iron precipitated, in a new furnace, from which it is withdrawn in the state of blooms, and at once shingled or melted into steel. In place of some 4 tons of best coal to obtain a ton of wrought iron, only 28 cwt. of coal of an inferior quality produce the same weight. An interesting discussion followed the lecture, in which Dr. Frankland, F.R.S., and other leading chemists took part. It resulted in the confirmation of the views propounded by Dr. Siemens.

Land in London.—At the London Auction Mart, on Wednesday week, Messrs. Edwin Fox & Bousfield sold the Globe Tavern, at the corner of Fore-street and Finsbury-pavement, for 17,000*l.*, the two houses adjoining in Fore-street for 8,400*l.*, and the Moorgate Tavern, in Finsbury-pavement, for 8,150*l.* The area of the several lots amounted to 3,448 ft., so that the price realised was at the rate of 10*l.* per superficial foot.

Mr. Wagner, C.E.—In our last we printed a letter headed "Northumberland House: an Idea," sent to us, clearly written by the writer, Mr. J. Wagner, a civil engineer. On the day it was published (Friday, the 21st), the writer died, at his residence in the Vauxhall-road, aged seventy-one years.

Compulsory Taking of a Manor Farm for Drainage Purposes.—At a special meeting of the Reading Town Council, the common seal of the corporation was affixed to a notice to Mr. Richard Attenborough of the intention of the Local Board of Health, pursuant to the Reading Local Board Waterworks, Sewerage, Drainage, and Improvement Act, 1870, and the Acts incorporated therewith, to issue their warrant to the sheriff of Berks for summoning a special jury for the purpose of determining the price and compensation payable to the said Richard Attenborough, and stating the amount which the council are willing to give for compensation. The *offer* was 5*s.* for the Manor Farm, &c.; but the special jury, of course, will make the award, and the the Board will pay it. Mr. Hawkins, Q.C., and another counsel, have been retained for Mr. Attenborough.

Local Improvements at Westerham.—A short time since an improvement in the foot-paths of the High-street of this town was made by several owners of property, and now a long stretch of new pavement has been laid down in front of the property of the squire, who has caused sundry walls and fences belonging to him to be pulled down and set further back, so as to enable his workmen to continue the foot-path along one side of the road, where previously none existed. Colonel Warde has also settled upon giving, as a site for the group of alms-houses which a certain charitable Sister of Mercy is about to erect here and endow, at the cost of about 10,000*l.*, a piece of ground which will possess a frontage to the London-road. The plans and elevations have been prepared by Mr. F. Streatfeild, of Charts Edge, and Mr. Worssell's contract for erecting them has, we understand, been accepted.

The City Walls of Gloucester.—Mr. Bellows, one of the members of the Cotteswold Naturalists' Field Club, has laid bare portions of that part of the wall lying north of the East Gate of Gloucester, at his new premises in Eastgate-street. The wall, exposed for a length of 42 ft., says the local *Chronicle*, proved to be about 6 ft. on the top, increased by three successive sets-off to a width of about 7 ft. towards the base. Nothing as yet has been found so as to indicate specially a Roman origin. On the inner side, however, amongst broken pottery and other rubbish of undoubted Roman character, were found three pieces of Samian ware with the potter's mark upon them, and a few other ancient relics.

Slaughterhouses in the Metropolis.—At the last meeting of the Metropolitan Board of Works, the Works Committee reported that they had considered the subject of the Bill introduced by Dr. Brewer, M.P., to repeal the 7th section of the Building Act of 1844, prohibiting the existence of slaughterhouses in the metropolis after 1874. It appeared to the committee that the Board should approve the Bill, and they recommended accordingly. At the desire of the solicitor, the consideration of the report was deferred in order that he might fully consider the Act, and report to the Board thereon; and also take the opinion of Mr. Manisty, Q.C., and Mr. Poland, as to its interpretation. Meantime, Dr. Brewer explained the provisions of his Bill. We regret that we cannot support him.

London International Exhibition, 1873. At the fourth meeting of the committee on Scientific Inventions and New Discoveries at the Royal Commission Offices, Gore Lodge, Mr. Chas. B. Vignoles, F.R.S., in the chair, the committee examined the objects already delivered, and rejected those which, in their opinion, were unworthy of admission in the class, which consists of objects the excellence and novelty of which are so great as to render it undesirable that their introduction to the public should be delayed until the proper year for the exhibition of their class of manufacture in the Industrial Division. The arrangement of objects is proceeding rapidly.

Parquet Floors.—We willingly mention that Messrs. A. J. Arrowsmith & Co. obtained a medal and certificate at the Dublin Exhibition for their parquet floors. The same firm are providing handsome parquet dados for the principal apartments of Bolton Townhall.

"The Vapour Stove."—We are asked to state that the "vapour stove" recently mentioned in our pages is sold in London, not Liverpool. The manufacturers must take the usual modes of making their address known.

Tracing-paper.—A method for rendering ordinary drawing-paper transparent for the purpose of making tracings, and of removing its transparency so as to restore its former appearance when the drawing is completed, has been invented by C. Puscher. It consists in dissolving a given quantity of castor-oil, in one, two, or three volumes of absolute alcohol, according to the thickness of the paper, and applying it by means of a sponge. The alcohol evaporates in a few minutes, and the tracing-paper is dry and ready for immediate use. The drawing or tracing can be made either with lead-pencil or India-ink, and the oil removed from the paper by immersing it in absolute alcohol, thus restoring its original opacity. The alcohol employed in removing the oil is, of course, preserved for diluting the oil used in preparing the next sheet.

Driving Machinery by Waste Heat of Steel Works.—Arrangements have been patented by Mr. Joseph Knott, of the Highfield Steel Works, Sheffield, for applying the waste heat of steel melting furnaces to the driving of the machinery. They are very simple. Mr. Knott has six furnaces along the end of one melting-room, discharging their surplus heat and flame into a perpendicular chimney stack of the usual kind. A boiler-room adjoins, and the boiler is laid along the side of the chimney stack. To the perpendicular flues dampers are fitted, by the insertion of which the heat and flame are diverted into a wide horizontal flue under the boiler.

Proposed Memorial to the late Samuel Bamford.—A meeting of the subscribers to the fund for the erection of a memorial at Middleton in honour of the late Samuel Bamford, has been held in that town. Various designs were submitted, including one of a statue, and it was decided that the most suitable form would be an obelisk of rough granite, with an appropriate inscription.

Society of Biblical Archæology.—A proposition has been made by the few surviving members of the Syro-Egyptian Society, the Anglo-Biblical Institute, the Chronological Institute, and the Palestine Archæological Association, to incorporate, with all their books and effects, as life members of the society of Biblical Archæology, and this will be recommended for consideration by the council.

A Great Make.—Messrs. Thomson & Browning, the London agents of the Darlington Iron Company, write,—"It may be interesting to some of your readers to know that during the last fortnight 3,988 tons of rails were made at these works. We do not think so large a quantity of rails has ever been made in England, under one roof, within the same space of time."

Engineer to the Great Yarmouth Port Commission.—Sir John Coode, C.E., has accepted the office of consulting engineer to the Great Yarmouth Port and Haven Commission, and will in a short time inspect the harbour works.

TENDERS

For metropolitan meat and poultry markets, Smithfield. Western extension. Mr. Horace Jones, architect. Mr. W. Reddall, and Messrs. Williams & Taylor, surveyors :—

Higgs	£103,232 0 0
Myers & Sons	99,980 0 0
Baker & Son	99,483 0 0
Lucas, Brothers	99,448 0 0
Peto Brothers	95,870 0 0
Webster	93,950 0 0
Hart	88,946 0 0
Perry & Co.	88,875 0 0
Henshaw & Co.	87,845 0 0
Trollope & Sons	85,743 0 0
Ashby & Horner	84,917 0 0
Conder	84,520 0 0
Ashby & Sons	84,245 0 0
Hill & Sons	83,827 0 0
Browne & Robinson	83,180 0 0
Holland & Hannen	82,848 0 0

For alterations, &c., in rear of No. 26, Red Lion-square, Holborn, W.C. Messrs. Davis & Emanuel, architects :—

Goodwin	£390 15 0
Vernall	336 0 0
Williams & Son	327 0 0

For Brierly Hill Board schools and teachers' residences. Mr. T. Smith, architect. Quantities by Messrs. T. C. & J. P. Sharp :—

Thompson	£6,623 11 7
Lovatt	6,100 0 0
Nelson	5,665 0 0
Horton	5,498 0 0
Stockton & Sons	5,479 0 0

For a shoe manufactory, Stafford, for Messrs. Hollin & Anderson. Mr. J. Ratcliffe, architect :—

Ratcliffe	£1,897 0 0
Adams & Pemberton (accepted)	1,890 0 0
Whittome	1,856 0 0
Engineers and Heating Apparatus.	
Rudge & Griffiths	£260 0 0

For a leather warehouse and house, Marston-road, Stafford, for Messrs. Lewis Brothers & Arkell. Mr. J. Ratcliffe, architect :—

Bridgett	£1,332 0 0
Adams & Pemberton	1,210 0 0
Ratcliffe	1,189 0 0
Reynolds	1,150 0 0
Whittome (accepted)	1,146 0 0

For the Christ Church schools, Rowley-street, Stafford. Mr. J. Ratcliffe, architect :—

Adams & Pemberton	£1,039 10 0
Whittome	1,016 10 0
Ratcliffe (accepted)	1,009 0 0

For Amersham and Woodrow National Schools, Bucks. Mr. Vernon, architect :—

	Amersham.		Woodrow.
Taylor	1,625 0	...	£195 0
Snell	1,421 0	...	190 0
Child	1,392 0	...	184 10
Stone	1,360 0	...	200 0
Fincher	...	...	...
Baughurst	1,350 0	...	145 0
Sexton	1,320 0	...	168 10
Batchelor	1,290 0	...	173 0
Spicer	1,272 0	...	181 0
Woodbridge	1,275 0	...	170 0
Reavell*	1,275 0	...	155 0
May	1,200 0	...	150 0

* Accepted.

For the erection of a villa at Leytonstone, Essex, for Mr. P. F. Lironi. Mr. W. Mundy, architect. Quantities supplied :—

Rivett	£1,789 0 0
King & Son	1,780 0 0
Brown	1,750 0 0
Smith	1,687 0 0
Ennor	1,684 0 0
Chapman	1,660 0 0
Forrest	1,631 0 0
Arber	1,575 0 0

For the erection of schools at Globe-terrace, Hackney, for the London School Board. Mr. E. R. Robson, architect. Quantites by Messrs. Northcroft, Son, & Neighbour :—

Langmead & Way	£8,821 0 0
Conder	8,475 0 0
Sewell & Son	8,090 0 0
Hearle	7,948 0 0
High	7,921 0 0
King & Son	7,846 0 0
F. & F. J. Wood	7,704 0 0
Niblett & Son	7,297 0 0
Perry & Co.	7,178 0 0
Shurmur	4,840 0 0

For the restoration of Tempsford Church, Bedfordshire. Mr. E. Browning, architect:—

Foster	£2,655 0 0
Thompson	2,641 0 0
S. & W. Pattinson	2,414 0 0
Halliday & Cave	2,386 0 0
Perkins & Sons	2,327 0 0
Law & Son (accepted)	2,292 0 0

For rebuilding premises for the London and County Bank, George-street, Richmond. Mr. R. Brewer, architect. Quantities by Messrs. G. Lansdown & Pollard :—

Will & Sons	£2,340 0 0
Gascoigne	2,316 0 0
Sweet	2,040 0 0
Sims	2,020 0 0
Carliss (accepted)	1,967 0 0

For alterations and additions to premises, Nos. 6 and 7, Chiswell-street, for Messrs. Blyth & Son. Mr. B. Fletcher, architect. Quantities not supplied :—

Bridgman, Nuthall, & West	£515 0 0
Bayes & Ramadge	500 0 0

For residences, schools, and other buildings, in concrete, faced with brick, at Grey's, Essex, for the Governors of Palmer's Charity. Mr. T. R. Maples, architect. Quantities supplied :—

	Main Building.		Tower.
Bridgman, Nuthall, & West	£7,009 0 0	...	£225
Kirk	6,254 0 0	...	230
Mann	6,099 0 0	...	270
Blake	6,000 0 0	...	200
Everett	5,975 0 0	...	200
Pearson	5,795 0 0	...	210
Woodbridge	5,550 0 0	...	170
Cobham	4,894 8 11	...	220
Rawlings	4,843 0 0	...	150

For the erection of school and residence, at Birdbrook, for the Birdbrook School Board. Mr. F. Whitmore, architect. Quantities by Messrs. P. & L. Curtis & Son :—

Last & Son	£925 0 0
Cole Brothers	830 0 0
Grimwood & Sons	829 10 0
Theobald	785 0 0
Fall	772 0 0
Mason & Son	735 0 0
Hall	717 0 0
Pudney & Son (accepted)	698 3 0

For erecting a warehouse and offices at the Docks, Gloucester, for Messrs. Wait, James, & Co. Mr. C. N. Tripp, architect. Quantities by Mr. H. Carrington :—

King & Godwin	£8,230 0 0
Meredith	7,933 0 0
Collins & Callis	7,914 0 0
Clutterbuck	7,850 0 0
Ashbee & Son	7,630 0 0
Estcourt & Co. (accepted)	7,545 0 0

For the rebuilding of No. 313, High Holborn, for Messrs. W. Watson & Son. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett :—

Haylock & Son	£4,075 0 0
Killby	3,640 0 0
Wagstaff & Son	3,605 0 0
Patman & Fotheringham	3,583 0 0
Browne & Robinson	3,435 0 0
Sabey & Son	3,389 0 0
King & Son	3,304 0 0
Axford	3,268 0 0
Elkington (accepted)	3,065 0 0

For the erection of stables, car-shed, and offices, at Broad-street, Portsmouth, for the Provincial Tramways Company. Messrs. Davis & Emanuel, architects. Quantities supplied :—

Burbidge	£1,695 0 0
Morey, jun.	1,650 0 0
Bramble Brothers	1,525 0 0
Cooper	1,498 0 0
W. R. & C. Light (late)	1,490 0 0
Ward	1,467 0 0
Quick (late)	1,455 0 0

For new wing to residence, Bickley Park, Kent. Messrs. J. Young & Son, architects :—

Hart	£1,488 0 0
Kirk	1,435 0 0
Newman & Mann	1,435 0 0
Fish	1,430 0 0
Conder	1,397 0 0
Arnaud	1,295 0 0
Merritt & Ashby	1,235 0 0
Burrows & Brooker	1,075 0 0

For new warehouse, 52, Bow-lane. Messrs. Young & Son, architects :—

Kirk	£1,718 0 0
Hart	1,682 0 0
Fish	1,650 0 0
Ashby & Horner	1,627 0 0
Newman & Mann	1,556 0 0
Sewell & Son	1,543 0 0
Merritt & Ashby	1,525 0 0
Conder	1,494 0 0

For additions to walking-stick factory, 180, Old-street, St. Luke's. Plans by Mr. A. D. Dawnay :—

Nicholas	£816 0 0
Pask	620 0 0
Nutt & Co.	577 0 0
Falkner	575 0 0
Porter	573 0 0

For the erection of the Craven schools and lecture-hall, Marshall-street, Golden-square. Mr. R. H. Burden, architect :—

Hill & Sons	£3,980 0 0
Macey	3,835 0 0
Dunn	3,813 0 0
Axford	3,657 0 0
Stoner	3,595 0 0
Keyes & Head	3,385 0 0
Scrivener & White (accepted)	3,357 0 0

For co-operative stores and dwelling-house, at New Basford, Notts. Mr. H. Walker, architect. Quantities supplied :—

Barker	£998 0 0
Cooke & Broomhead	989 19 0
Wooll & Slight	979 0 0
Hind	970 0 0
M'Pherson	928 0 0
Horsfield	920 0 0
Marriott & Co.	880 0 0
Cooper	816 0 0
Cargiel (accepted)	805 0 0

For the erection of twenty-eight houses, fence, walls, and conveniences, at Newstead, Nottinghamshire, for the Newstead Colliery Company. Mr. S. Rollinson, architect. Quantities supplied :—

Wilcockson	£3,750 0 0
Bramwell	3,740 0 0
Pattinson	3,584 0 0
Marriott	3,500 0 0
Hadfield	3,349 0 0
Stevenson & Weston	3,255 0 0
Forrest (accepted)	3,175 0 0
Hays	3,140 0 0
Greenwood	3,005 0 0
Hadfield	2,900 0 0
Green	2,810 0 0
Attenborrow	2,615 0 0

For wrought-iron railing in Marylebone-road, fronting the workhouse. Mr. H. S. Snell, architect :—

Main & Co. (accepted)	£441 0 0

For granite curb and foundations :—

Howard Brothers (accepted)	£375 0 0

TO CORRESPONDENTS.

J. J. A. (thanks: not desired).—H. S. S. (too late for attention this week).—W. P. & T. B. (thanks: not desired).—T. N. M. (shall have attention).—G. M. B. (apply to Local Board, or the Inspector of Nuisances).—K. & Son. — S. — W. D.—B. N. & W. — G. G. & Sons.—J. T.—C. N. F.—North Hants. — J. K.—O. S.—B. W.—S. R.—A. J.—C. S. & Sons.—J. M.—J. B.—C. R. S.—A. V.—Messrs. S.—D. & R.—G. S.—H. B. W. — A. J. — J. G. — D.—F. S.—C. C. H. — E. B. B.—M. & P. — E.—W. W. — G. T. — E. F.— G. T. C.—A. H. (under our mark).—G. C.—A. D. D.

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